For Reference

NOT TO BE TAKEN FROM THIS ROOM

THE UNIVERSITY OF ALBERTA

1966 (F)
140

DEVELOPMENT OF TRANSPORTATION IN THE PEACE RIVER REGION OF ALBERTA AND BRITISH COLUMBIA - WITH AN EVALUATION OF PRESENT DAY RAIL AND ROAD COMMODITY FLOW PATTERNS

by

GEOFFREY ALLAN WILLIS

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF ARTS

DEPARTMENT OF GEOGRAPHY

EDMONTON, ALBERTA

SEPTEMBER, 1966

ABSTRACT

The development of transportation in the Peace River region of Alberta and British Columbia has taken place in a number of stages, each on associated with the economy of the region at a particular time. With the establishment of fur trading posts on the River, transportation to and from the east was based almost entirely upon the use of the natural waterways. Increasing settlement made it imperative that improved transport facilities were provided. The construction of a railway from Edmonton, connecting the region to the main trans-continental lines, provided an outlet through which the farmers could market their agricultural produce.

The rapid growth of road transportation in competition with the railway, in the late 1940's marks the most recent stage in this development process. This change with the construction of first class highways, connecting the region to the west coast and to Edmonton, was related to the expanding economy of the region, no longer wholly dependent on agriculture.

Analysis of the present day rail commodity flow pattern, to and from the Peace River region, relates the commodity movements from shipping centers to the population of the settlements.

ACKNOWLEDGMENTS

I am indebted to Dr. A.H. Laycock, of the Department of Geography, University of Alberta, for his valuable assistance in the preparation of this thesis. Appreciation is also expressed to Professor J.I. Romanowski, formerly of the University of Alberta, for his indispensable criticisms of the quantitive methods used in this study.

I would also like to express my thanks to the various transportation companies, for the invaluable information supplied by them, especially the staff of the Northern Alberta Railway, who spent considerable time, sorting out freight movement information.

Finally, I wish to thank my wife, Anne, for her assistance in the preparation of various maps, and Mr. Jack Chesterman for reproducing the text and maps.

TABLE OF CONTENTS

ABSTRACT iii

ACKNOWLEDGMENTS iv

TABLE OF CONTENTS v

LIST OF FIGURES vii

LIST OF TABLES ix

LIST OF ABBREVIATIONS xi

Chapter

I. INTRODUCTION 1

II. THE FUR TRADING ERA 9

Expansion of the Fur Trade to the West 9
Methods of Transport 14
Establishment of Posts on the Peace River 19
Modifications in the Fur Trade 24
Summary 26

III. GROWTH OF TRANSPORTATION, 1900 TO 1948 28

Early Roads 28
Extension of the Railways 33
  Construction of the Trans-Continental Railways 33
  Extension of the Rail Network into the Peace River Region 38
  Expansion of Settlement and Commodity Movements to 1930 42
Rail Commodity Shipments, 1930 to 1948 47
The Road Network up to 1948 54
Summary 60

IV. DEVELOPMENT OF MODERN HIGHWAYS 62

Post War Development of Resources 63
Construction of Main Highways and the Extension of Local Roads 70
Emergence of the Trucking Companies 78
Highway Competition and Railway Extension 85
Summary 94

V. PRESENT DAY COMMODITY FLOW PATTERNS 96

Commodity Movements by Rail 97
  Grain Shipments 98
  Livestock Shipments 99
  Lumber Shipments 99

Commodity Movements by Road 100
Summary 103

VI. EVALUATION OF COMMODITY FLOW PATTERNS 104

Outward Tons by Rail 104
Inward Tons by Rail 108
Relationship between Road and Population Densities 109
Summary 111

VII. SUMMARY AND CONCLUSIONS 112

BIBLIOGRAPHY

APPENDIX A - Commodity Shipments on Northern Alberta Railway, from Peace River Stations to Edmonton, 1932 - 1946 125

APPENDIX B - Total Rail Shipments from Peace River Stations to Edmonton, 1932 - 1946 127

APPENDIX C - Export and Domestic Grain Rates from Peace River Stations, 1931 128

APPENDIX D - Graph of Homestead Leases in Alberta, 1951 - 1965 130

APPENDIX E - Provincial Expenditure on Highways and Local Roads, 1948 - 1963 131

APPENDIX F - Commodity Shipments on Northern Alberta Railway from Peace River Stations to Edmonton, 1951 and 1961 132

APPENDIX G - Rail Commodity Flows, Peace River Region, 1964 133

APPENDIX H - Communities in the Peace River Region served by Trucking Companies from Edmonton, 1964 135

APPENDIX I - Data and Formulae for Statistical Analysis of Rail Commodity Movements, 1956 and 1964 137

APPENDIX J - Data and Formulae for Statistical Analysis of Road Densities, 1965 139

LIST OF FIGURES

Following page

1. Patterns of Transport (1965) and Land Use (1961) in the Peace River Region 4
2. Peace River Region, Physical Features 5
3. Fur Trading Routes to the Canadian Northwest to 1821 10
4. Trails into the Peace River, 1909 19
5. Canada,Trans- Continental Railways (West of Winnipeg) 33
6. Construction of Railways and Location of Railway Settlements, Peace River Region 39
7. Rail Network and Areas of Settlement, Peace River - 1921 42
8. Rail Network and Areas of Settlement, Peace River - 1931 42
9. Freight Shipped from Stations to Edmonton - 1932 47
10. Freight Shipped from Stations to Edmonton - 1936 47
11. Freight Shipped from Stations to Edmonton - 1941 47
12. Freight Shipped from Stations to Edmonton - 1946 47
13. Changes in Total Shipments to Edmonton - 1932 to 1946 52
14. Changes in Grain Shipments to Edmonton - 1932 to 1946 52
15. Changes in Livestock Shipments to Edmonton - 1932 to 1945 52
16. Changes in Lumber Shipments to Edmonton - 1936 to 1946 52
17. Graph of Total Rail Shipments from Peace River - 1932 to 1946 53
18. Graph of Cents per Ton Mile Rates on Grain Shipments from Peace River, 1931 54
19. Road Network, Peace River, 1924 56
20. Road Network, Peace River, 1932 56
21. Road Network, Peace River, 1941 57
22. Road Network, Peace River, 1948 57
23. Graph of Alberta Provincial Expenditure on Highways and Local Roads in Peace River, 1923 to 1947 59
24. Average Traffic Flows, Peace River, 1964 73

25. Road Network, Peace River, 1951 74

26. Road Network, Peace River, 1961 74

27. Graph of Provincial Expenditure on Highways and Local Roads, Peace River Region, 1948 to 1963 75

28. Graph of Northern Alberta Railway Operating Revenue and Expences, 1948 to 1964 86

29. Changes in Grain Shipments to Edmonton, 1951 to 1961 88

30. Proposed Routes of Great Slave Lake Railway 90

31. Population of Peace River Settlements, 1964 96

32. Total Rail Commodity Flow, Peace River, 1964 97

33. Rail Commodity Flow (Grain), Peace River, 1964 98

34. Rail Commodity Flow (Livestock), Peace River, 1964 99

35. Rail Commodity Flow (Lumber), Peace River, 1964 99

36. Scatter Diagram - Logarithm Outward Tons from Peace River and Logarithm Population of Station Towns, 1964 107

37. Absolute Deviations of Shipments to Edmonton, 1964 107

38. Scatter Diagram - Logarithm Outward Tons from Peace River and Logarithm Population of Station Towns, 1956 107

39. Absolute Deviation of Shipments to Edmonton, 1956 107

40. Scatter Diagram - Logarithm Inward Tons to Peace River and Logarithm Population of Station Towns, 1964 108

41. Absolute Deviation of Shipments to Peace River Stations, 1964 108

42. Scatter Diagram - Population and Road Densities, Peace River, 1964 110

43. Relative Deviation of Road Densities, Peace River, 1964 110

44. Graph of Homestead Leases in Alberta, 1951 to 1965 Appendix D

LIST OF TABLES

Page

I. Agricultural Expansion in Alberta, 1901 - 1911 36

II. Agricultural Expansion, Census Division 16, Alberta, 1916 - 1931 44

III. Commodity Shipments by Rail, Peace River Region, 1920 - 1931 45

IV. Comparison of Rail Revenue and Outgoing Grain Shipments, from Peace River Stations to Edmonton, 1940 - 1945 50

V. Agricultural Progress in Peace River Region, 1936 - 1946 51

VI. Growth of Truck Registration in Alberta, 1923 - 1946 56

VII. Agricultural Progress, Peace River Region, 1951 - 1961 64

VIII. Production of Sawtimber, Northern Alberta, 1964 66

IX. Growth of Towns and Villages along the Alaska Highway Route, 1941 and 1951 72

X. Registered Farm Trucks, Peace River Region, 1951 and 1961 76

XI. Growth of Long Haul Trucking between Central and Western Canada, 1953 to 1960 79

XII. Grimshaw Trucking and Distributing Limited, Shipments of Freight, Peace River Region, 1964 84

XIII. Shipments of Grain and Livestock from Northern Alberta Railway Stations to Edmonton, 1947 - 1949 87

XIV. Freight Interchange at Dawson Creek, 1958 - 1964 89

XV. Grain Interchange to Pacific Great Eastern Railway at Dawson Creek, 1960 - 1963 89

XVI. Trans-shipments to Northern Alberta Railway from Great Slave Lake Railway, at Roma, 1962 - 1965 92

XVII. Canadian Coachways, Passenger Statistics, 1962 - 1965 93

XVIII. Canadian Coachways, Passenger and Freight Revenue, 1962 - 1965 94

XIX. Tonnages carried by Trucking Companies, Operating in the Peace River Region, 1964 101

XX. Trucking Companies Operating into Non Railway Centers, Peace River Region, 1964 103

LIST OF ABBREVIATIONS

C.N.R.	Canadian National Railways
C.P.R.	Canadian Pacific Railways
D.B.S.	Dominion Bureau of Statistics
E.D. and B.C.	Edmonton, Dunvegan and British Columbis Railway
G.S.L.R.	Great Slave Lake Railway
G.T.P.	Grand Trunk Pacific Railway
N.A.R.	Northern Alberta Railway
P.G.E.	Pacific Great Eastern Railway
Peace River	This refers to the Peace River Region, and not the River itself.

CHAPTER I

INTRODUCTION

Transportation is one of the most important single factors affecting the development of any region, and the technological changes which have taken place in transport have had differing effects upon the economic development of different regions. Prior to the present day widespread use of motor vehicles and railroads, the pattern of traffic which was generated by rural residents was usually focused upon a single local central place. In recent times, the desire of the rural residents for services and goods associated with larger urban centers has resulted in demands for improved transport facilities. These demands have produced a marked change in the traditional traffic patterns, in addition to producing an increase in the flow of commodities, which are now moving greater distances at increasing speeds.

An important element of geographical regional investigation is the study of the inter-relationships between areas. A better understanding of these relationships can be obtained by an examination of the patterns of inter-regional commodity flows. The addition of this dynamic element to static patterns of distribution adds a perspective which results in a better understanding of the role of a particular area in the national economy. In addition, transportation patterns, as shown by road and rail networks and the flow of traffic, constitute perhaps the most important single factor in the location of industry and agriculture, in addition to the distribution of population, and in this sense these patterns are vital to a study of regional and economic geography.

The discussion in this study is concerned with transportation as one ✓ element in the economic development in the Peace River region of Alberta and

British Columbia. In addition, it is a study of an area which was, until very recently, separated from its main trade center by nearly 300 miles of wilderness. Bordered on all sides by inhospitable terrain, it became an "island" of agricultural development, dependent on Edmonton for the majority of its needs. After the second World War, however, the economy and associated transport facilities expanded, and the region became more integrated economically into the remainder of Western Canada.

The body of the study consists of five chapters, the first of which is a description of the initial development of trade and transportation, from the time of the early fur traders to the beginning of the twentieth century, at which time the surge of agricultural settlers into the area began. The growth of the railway, which dominated transportation from 1914 to 1948, is discussed in chapter 3. This is followed in chapter 4 by a description of the construction of modern highways and local roads, together with the associated rise in importance of the trucking companies. Chapter's 5 and 6 comprise a description and evaluation of present day patterns of commodity flow.

Transportation in the Peace River region developed in a series of stages, the first of which was brought about by the expansion of the fur trade to the Pacific coast, and the establishment of posts on the river to provide food and provisions for the traders. This initial stage was accomplished by the use of the water routes, with overland trails used at a later date as alternative routeways. The second stage was generated by the railway, linking up the region with its main trade center Edmonton, in order to provide an outlet for the expanding volume of agricultural produce. During this period of the railways' initial growth, when it held the monopoly on the movement of goods into and out of the region, the road acted in the capacity of a subsidiary transport facility, feeding the railway. The final stage in this development

process was the rapid growth of motor transport, aided by increasing government expenditure on main highways, which placed the road in a competitive position with the railway, for many commodities.[1]

In selecting the criteria to be examined, various themes were omitted because they did not appear directly pertinent to the aims of the study. For example, the emphasis is on the movement of goods rather than people, and for this reason air transport has been disregarded. The airlines which operate into the region from Edmonton and Vancouver, are mainly concerned with passenger traffic, and the movement of express freight into the region accounts for only a small percentage of the total revenue of the airlines.[2] Another topic which is barely touched on is the movement of goods which takes place between Edmonton and the larger centers to the south and east.

Other omissions reflect a lack of statistical information, which was either unobtainable or unavailable to the writer, due to the reluctance of several sources to divulge the information. An example of this is in the case of commodity flow by rail. Information on goods shipped out of the Peace River region was readily available, as far back as 1932, but the record of goods moved from Edmonton, north, was only available for the past three years. In addition, road commodity flow statistics are almost non existant at present and cannot be discussed as precisely as rail movements. Most of

---

[1] This approach, of a sequence of transportation development, has been used previously in a paper on transport expansion in West Africa. See E.J.Taaffe, R.L.Morrill, and P.R.Gould,"Transport Expansion in Underdeveloped Countries: a Comparative Analysis," Geogr. Review, Vol.53,No.4, October,1963, pp.503-529.

[2] Pers. comm., G.Campbell, Pacific Western Airlines, Edmonton, and G.B.Hunnings, Canadian Pacific Airlines Limited, Vancouver.

the information on the transport of goods by road was obtained directly from the road transport operators, and although these figures were incomplete and therefore not easily quantified, they did provide an impression of the general orientation of road transport movement into the region.

GENERAL BACKGROUND

In this study, the term "the Peace River region" will refer to the settled areas of the Peace River drainage basin, lying in the northwest part of Alberta and extending west into British Columbia (see Figure 1). Within this region, a core area developed, based upon the availability of arable land, and served by the Northern Alberta Railway (N.A.R.). This core area was bordered on the north and northeast by extensive forest lands, on the west by the Rocky mountains, and on the south by the rough non-arable Swan Hills. With the extension of agriculture and the post war development of petroleum and natural gas, settlement extended north and west from the core area, and the region can now be viewed in the setting of a larger area, and regional boundaries should not be given more significance than they merit.

With the exception of the extreme western edge, where the Rocky mountain foothills are encountered, the relief associated with this region is composed of large areas of flat to undulating plain at 1,600 to 2,400 feet elevation above sea level (see Figure 2).[3] These areas, which consist of the remnants

---

[3] Much of the information on physiography, drainage and vegetation was gathered from various soil reports of the Research Council of Alberta: F.A.Wyatt and O.R.Younge, Preliminary soil survey adjacent to the Peace River Alberta, west of Dunvegan, Research Council of Alberta (R.C.A.), Report No.23, Edmonton, 1930; F.A.Wyatt, Preliminary soil survey of the Peace River-High Prairie, Sturgeon lake area, R.C.A., Report No.31, Edmonton, 1935; W.Odynsky and J.D.Newton, Soil survey of the Rycroft and Watino sheets, R.C.A., Report No.56, Edmonton, 1950; W.Odynsky, A.Wynnyk, and J.D.Newton, Soil survey of the High Prairie and McLennan sheets, R.C.A., Report No.63, Edmonton, 1953; W.Odynsky, A.Wynnyk, and J.D.Newton, Soil survey of the Grande Prairie and Sturgeon Lake sheets, R.C.A., Report No.74, Edmonton, 1956; W.Odynsky et al., Reconnaissance soil survey of the Beaverlodge and Blueberry mountain sheets, R.C.A., Report No. 81, Edmonton, 1961.

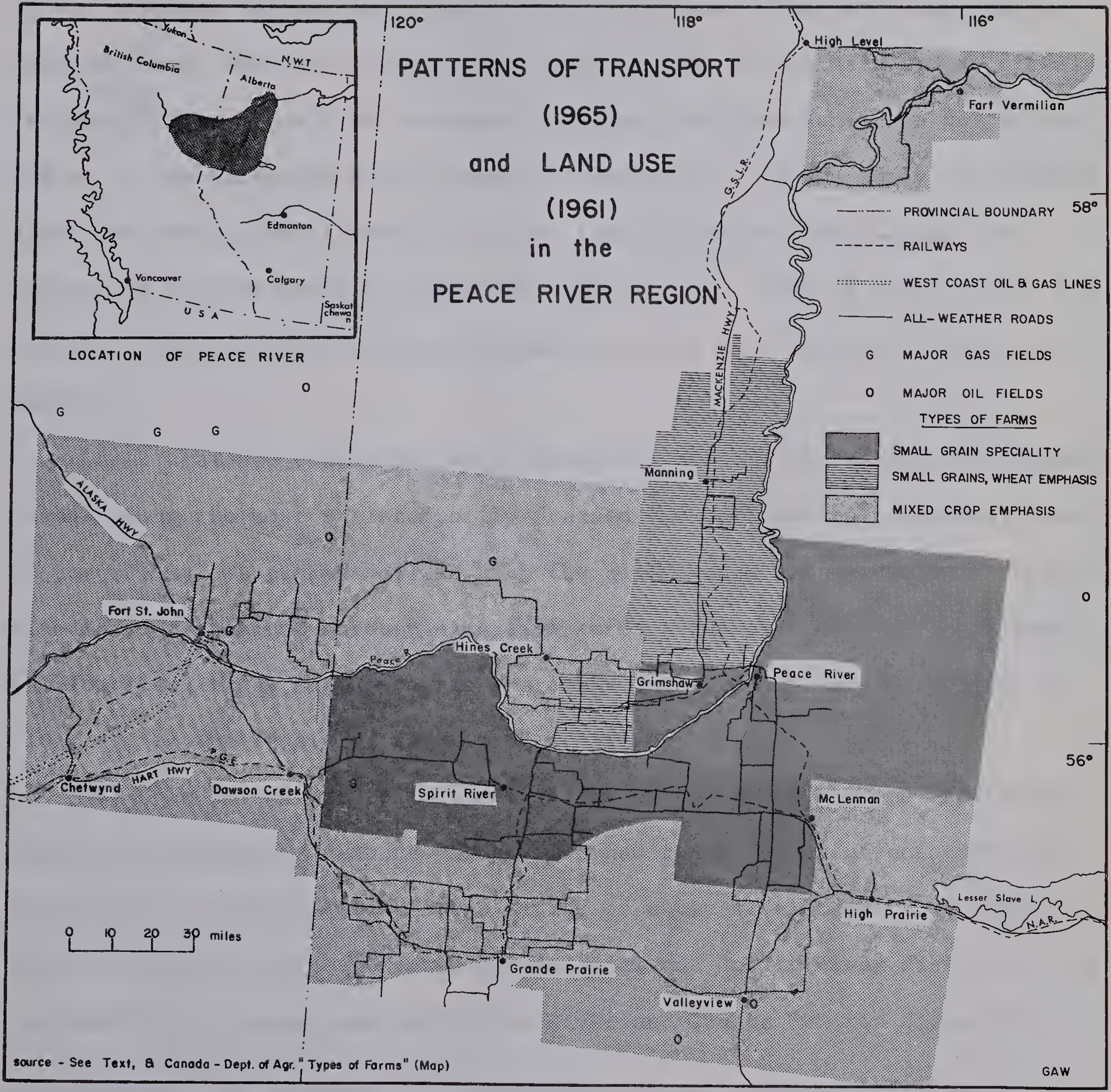

PATTERNS OF TRANSPORT (1965) and LAND USE (1961) in the PEACE RIVER REGION
LOCATION OF PEACE RIVER
Yukon
British Columbia
N.W.T.
Alberta
Edmonton
Calgary
Vancouver
U S A
Saskatchewan
120°
118°
116°
58°
56°
PROVINCIAL BOUNDARY
RAILWAYS
WEST COAST OIL & GAS LINES
ALL-WEATHER ROADS
G MAJOR GAS FIELDS
O MAJOR OIL FIELDS
TYPES OF FARMS
SMALL GRAIN SPECIALITY
SMALL GRAINS, WHEAT EMPHASIS
MIXED CROP EMPHASIS
High Level
Fort Vermilian
G.S.L.R.
MACKENZIE HWY
Manning
ALASKA HWY
Fort St. John
Hines Creek
Peace R.
Grimshaw
Peace River
Spirit River
Mc Lennan
Chetwynd
HART HWY
P.G.E.
Dawson Creek
High Prairie
Lesser Slave L.
N.A.R.
Grande Prairie
Valleyview
0 10 20 30 miles
source - See Text, & Canada - Dept. of Agr. "Types of Farms" (Map)
GAW

Figure 1

of a till plain and lake basins, are broken up at intervals by areas of semi-continuous upland rising to over 3,000 feet in elevation, in addition to deeply incised valleys of the major streams and rivers. The area is drained by the numerous streams and rivers forming the Peace River drainage system, with the Peace and its tributary, the Smoky, being the two main rivers crossing the area.[4] The Peace River eventually drains into Lake Athabasca to the north and on to the Mackenzie River system to the Arctic. In the early fur trading days, the Peace River formed a distinct line of penetration through the region, as well as being an important export route. Most of this traffic has now been wiped out with the establishment of main rail and road links to the south.

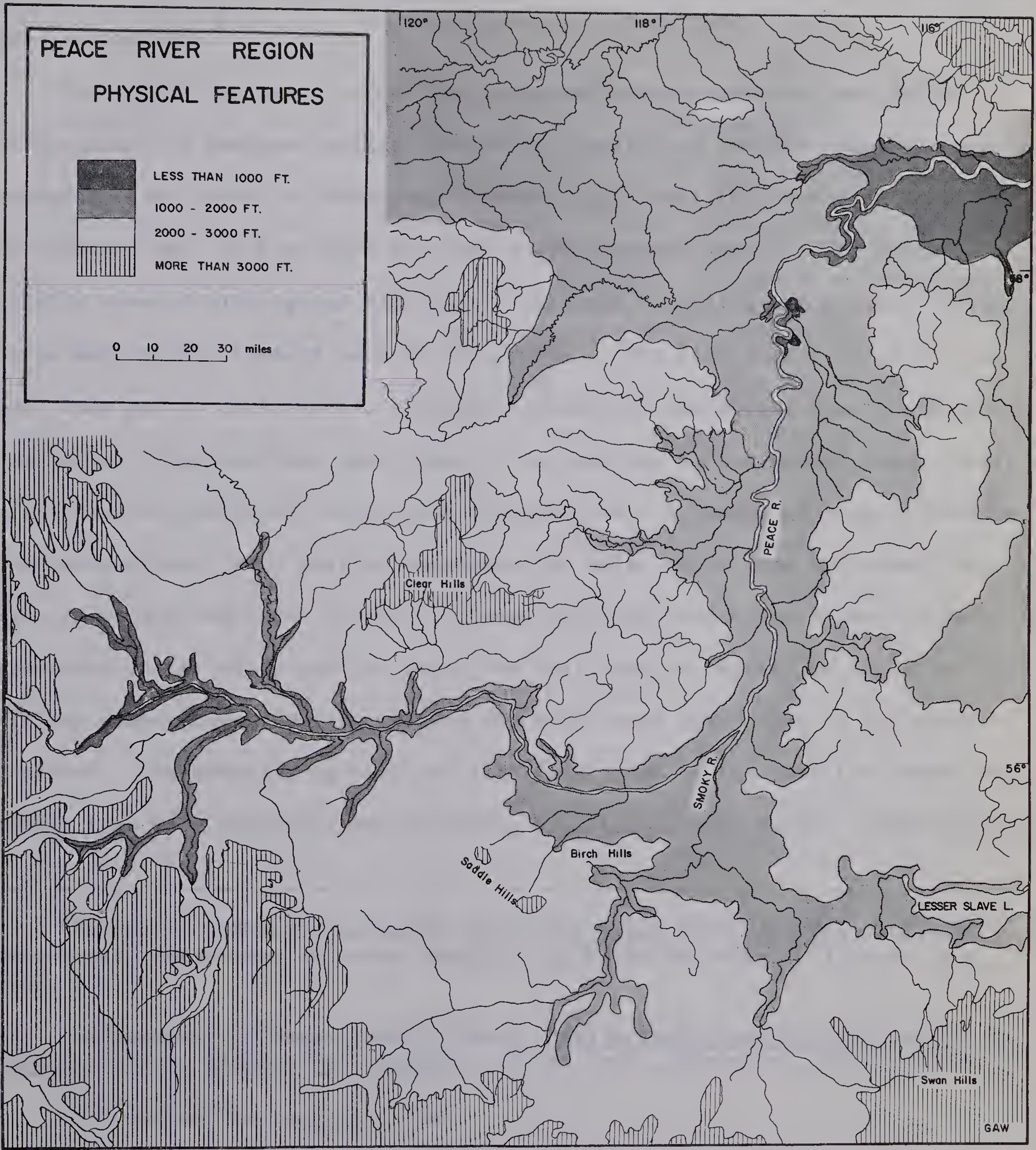
Local drainage conditions vary though the area, with the gently sloping plains being the most satisfactorily drained for agricultural purposes. Most of the steeper slopes associated with the hilly areas are excessively drained, with loss of moisture through excessive surface run off. On the other hand, the low lying areas and depressions are characterised by varying degrees of flooding, as the result of restricted drainage.[5]

The uplands and deeply incised valleys of the major streams and rivers are the physiographic features which have had the greatest effect upon both the lines of communication and the siting of early settlement. For example, the Peace River valley separated the Fairview and Spirit River districts, and the Saddle Hills separated the Spirit River and Grande Prairie districts.

---

[4] The Peace and Smoky rivers both gather the greater part of their water volume from outside the region. See R.L.Rutherford, "Geology and Water Resources in Parts of the Peace River and Grande Prairie Districts, Alberta," report No. 21, Geol. Survey Div., R.C.A., Edmonton, 1930, p.9.

[5] Soil surveys, op. cit.



Source: Canada, Dept. mines & Tech. Surveys, 1:250,000 maps

Figure 2

When roads and other lines of communication have had to cross these deep valleys and areas of rough terrain, certain construction and maintainance difficulties were encountered.[6]

The vegetation cover in the region varies between parkland and forest. In general, the dominant native vegetation consists of a mixed deciduous and evergreen tree cover, in which aspen poplar is of most frequent occurrence.[7] The uplands are, or have been, the most heavily wooded areas in the region, chiefly covered with spruce and poplar, although lumbering and periodic forest fires have rapidly removed much of the growth.[8] The flat plains areas are in part open and in part wooded, although now much of the wooded area has been removed with agricultural development. In addition to the wooded areas, there are extensive parklands, which Moss describes as " a mosaic of prairie patches and aspen groves, with prairie occupying the drier situations and aspen the more moist and sheltered places."[9] These parkland conditions appear to have prevailed in the early settled areas, as this type of vegetation could be cleared comparatively easily, making the areas very attractive to the early settlers. Construction of road and rail facilities in the forested areas has always been more expensive than building over the clearer areas. This has not

---

[6] Province of British Columbia, The Peace River Bulletin Area, Bulletin area No.10, Department of Lands, Forests and Water Resources, Victoria, B.C., 1963, p.45.

[7] W.Odynsky, C.D.Sawyer and V.A.Wood, Public Lands open for Settlement in the Peace River District of Alberta, (5th.ed.rev.), Edmonton, 1964, p.8.

[8] R.L.Rutherford, *op. cit*., p.12.

[9] E.H.Moss, "The Vegetation of Alberta," The Botanical Review, Vol.XXI, No.9, November, 1955, p.516.

prevented the forest zones from having adequate transportation conveniences however, and an examination of the relative distribution of tree cover in the area shows that the natural vegetation has not directly affected to any great extent, the distribution of rail lines and roads.[10]

Meteorological records indicate that the total annual precipitation over the region varies between 13.92 inches in the north at Fort Vermilion, and 17.91 inches at Beaverlodge in the south.[11] The heaviest precipitation occurs in June and July in most years, thus providing sufficient moisture for the crops. Moisture distribution, however, is not as favourable as in the areas further south; at Beaverlodge, only 66 per cent of the annual precipitation occurs during the fall, Spring and growing season, while around Edmonton it is 80 per cent.[12]

The temperature is characterised by a moderately warm summer and a cold winter. The mean annual temperatures vary from 35.7°F. at Beaverlodge, to 29.1°F. at Fort Vermilion, with mean July temperatures averaging 60.2°F. and 61.7°F. respectively. The corresponding mean January temperatures are 7.4°F. and -9.5°F. for the two stations.[13] The sub-zero weather, which is common in winter, slows down construction and maintainance on the highways, but does not disrupt the flow of goods. Heavy snow, however, can delay operations,[14]

---

[10] Soil surveys, op.cit.

[11] Precipitation normals for Alberta, (Based on period 1931 to 1960), Climatological Division, Meteorological Branch, Toronto, May, 1965.

[12] Soil survey, R.C.A. report No. 74, op.cit., p.18.

[13] Temperature normals for Alberta, (Based on period 1931 to 1960), Climatological Division, Meteorological Branch, Toronto, December, 1964.

[14] Annual snowfall ranges from 68.1 inches at Beaverlodge, to 50.9 inches at Fort Vermilion. See Precipitation normals for Alberta," op. cit.

and schedules are often disrupted, although not curtailed, with delays due to snow removal.

Other than the points already mentioned, physiography, climate and vegetation have not directly influenced transportation development in the Peace River region. Most routes, however, are still orientated to agriculture and agricultural service centers. As these agricultural patterns are strongly related to landforms, soils, vegetation and drainage patterns, the transport networks can be said to have been indirectly influenced by all these factors.

CHAPTER II

THE FUR TRADING ERA

In this present period of surfaced highways and railroads, it is not commonly appreciated how difficult it was for the fur trader to carry out an active trade between points on the Peace River and eastern Canada, a distance of over 2,000 miles. The character of the country and the nature of the water routes accentuated the difficulties of transportation, and limited the supplies which were brought into the region, to the bare necessities required for the fur trade.

The developments in the methods of transportation and the changes in the trade routes which took place in this period, form the subject matter of this chapter.

EXPANSION OF THE FUR TRADE TO THE WEST

To the white men who penetrated westward across the continent, the country suggested possibilities for new colonies, but the initial incentive was the fur trade. Contact was established by the French from Montreal and Quebec in the seventeenth century, and they advanced westward following the natural waterways and reaching Lake Winnipeg and the Saskatchewan River by 1748.[1] Contact was also made in the northeast of the country, where the English established trading posts on the coast of James Bay and on the western shores of Hudson Bay. In this case the Indians were encouraged to travel annually to these posts to trade, and for many years no attempt was made by the Hudson Bay traders to penetrate inland.

---

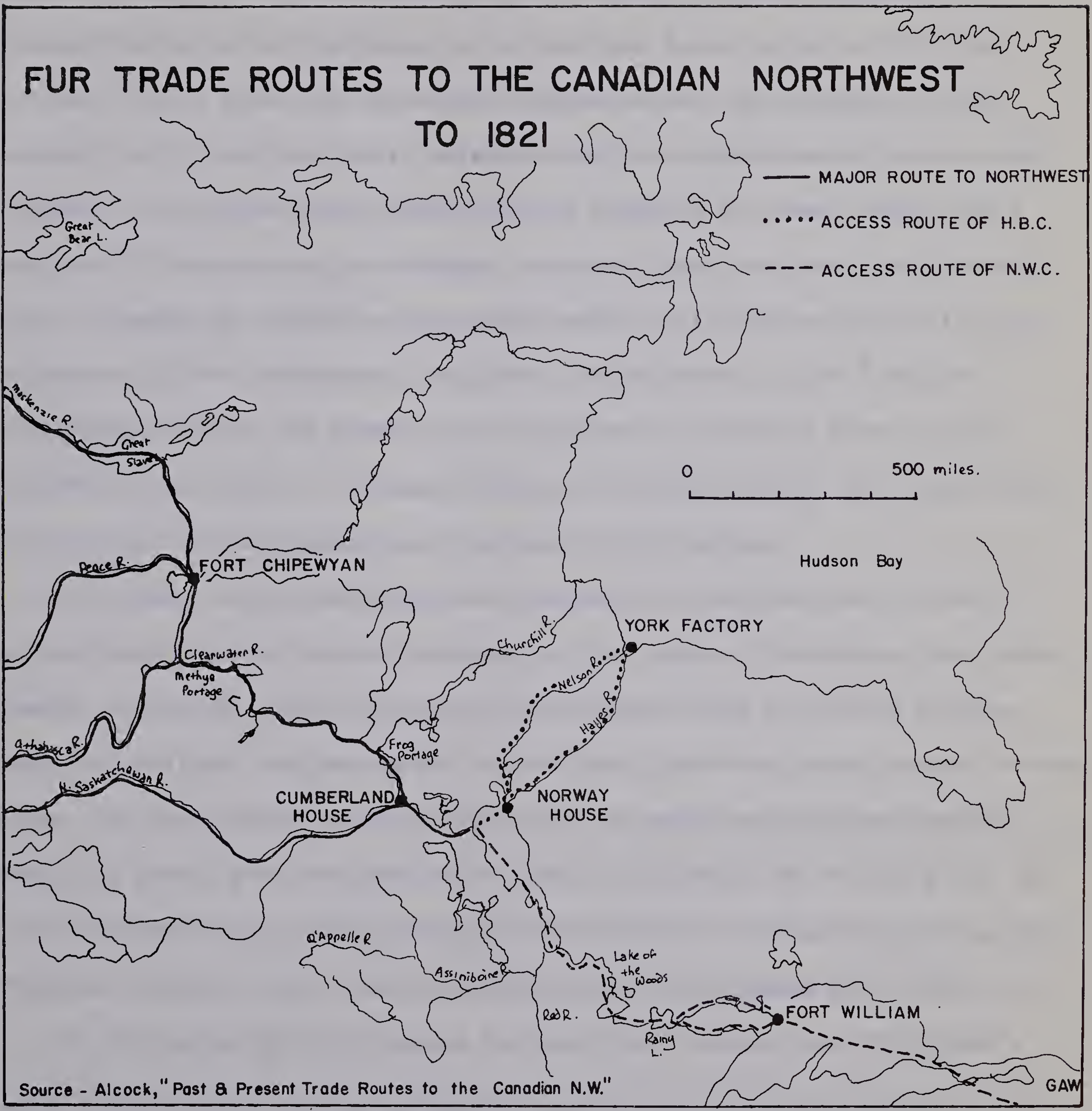
[1] H.A.Innis, The Fur Trade in Canada, Toronto, 1956, p. 95.

When Canada was transferred to the British in 1763, a great influx of merchants of Scottish descent took place into Montreal. These merchants took over the fur trade that had been established by the French. They were able to employ French Canadian personnel, who were experienced in the use of canoes and who had excellent relations with the Indians. Trading was pushed further into the northwest from the east, cutting off many of the furs which had previously been traded into Hudson Bay. This loss in trade made it necessary for the Hudson Bay traders to establish posts inland, and in 1770 Cumberland House on Sturgeon Lake, north of the Saskatchewan River was established (see Figure 3). From this time onwards, competition between the main trading companies took place, being intensified after 1784 with the union of the Montreal traders into the North West Company.[2]

The shorter route into the interior from Hudson Bay gave the English company a great locational advantage. From their base at York Factory, the canoes and boats travelled to Norway House on Lake Winnipeg, via the Hayes and Nelson Rivers. This route entailed several portages, where the boats and their cargoes had to be taken overland for several miles. From Norway House, where goods were stored for the winter, the route led to the northwestern end of Lake Winnipeg at the mouth of the Saskatchewan River. At this point rapids were encountered, and a portage had to be made over the most difficult parts. On the Saskatchewan River, a separation took place, some of the brigades proceeding up the two branches of the River. The brigades bound for the Athabasca and Peace Rivers, left the Saskatchewan near Cumberland House, crossed the Cumberland and Sturgeon Lakes and ascended the

---

[2] F.J.Alcock, "Past and Present Trade Routes to the Canadian North-West," Geogr. Review, Vol.10,No.2, 1920, p.61.



Source - Alcock, "Past & Present Trade Routes to the Canadian N.W."

Figure 3

Sturgeonweir River to Frog Portage and the Churchill River. From there, the brigades proceeded through Lake Isle a la Crosse to Lake la Loche and on to Methye Portage. This portage was one of the most serious hindrances to transportation to the northwest, as it was over twelve miles of difficult terrain. For a time, the boats were dragged across the portage on every journey, but it was eventually arranged that two brigades would operate east and west, to eliminate the arduous work of dragging the heavy boats such a distance.[3] From the Methye Portage, the route taken was down the Clearwater River, joining the Athabasca River near modern Fort McMurray and on to Lake Athabasca and Fort Chipewyan. This fort, established in 1789,[4] was the distribution center for goods to be dispatched to the Peace River and the Mackenzie River posts.[5] It also served, in the early years, as a center for the district of New Caledonia to the west of the Rockies.

The route used by the North West Company ran from Montreal, up the Ottawa River and over several portages to Lake Huron. From there, the route passed via the St. Mary's River into Lake Superior and on to Fort William. From Fort William, the main depot for the west, the route taken passed through Rainy Lake and Lake of the Woods and on to the south end of Lake Winnipeg. From this point, some brigades would cross to the mouth of the Red River and on to the Assininoine, while others would proceed to the northern end of Lake Winnipeg, and from there take the same routes as the Hudson Bay traders.

By the union of 1821, between the North West Company and the Hudson's

---

[3] Ibid., p.66.

[4] Innis, op. cit., p.200.

[5] All the posts on the Peace, Mackenzie, and Athabasca Rivers, were included in the Athabasca fur trading district.

Bay Company, the competition of the two routes - by the St. Lawrence and Hudson Bay - came to an end. The reorganised Hudson's Bay Company adapted Norway House as the center of its transportation system, with York Factory as the main point of entry for goods and for export of furs.

These were the earliest routes to the Athabasca district fur trading posts, and were used up to 1860, when the Hudson's Bay Company began to make use of the American railroad system to the south.[6]

The difficulties involved in the extension of the fur trade as far west as the Peace River involved the elaboration of an extensive organisation of transport and food supply. The improvements that were made to the type of transportation used, will be examined in the next section, but in addition, two main difficulties were much in evidence during the early period of trading. The first of these was the time factor involved between the purchase of the trading goods for the Indians and the resultant sale of the furs. Secondly, there was the difficulty involved in supplying sufficient food for the isolated posts, to enable them to carry on, especially during the long winter months.

The case of the North West Company will serve to illustrate the first point. Goods, both for provisions for the outlying posts and articles of trade to the Indians, were bought in London during the winter and spring. These goods had to be in Quebec by November, before the River closed, in order that they could be sorted and transported to Montreal by the following spring. From Montreal, the goods were sent into the interior during the summer, arriving around July and August. They could then be traded during that winter, and the furs brought back to Montreal the following summer, and on to England in the fall. This sequence entailed a time lag of over two

---

[6] Alcock, op. cit., p. 76.

years between the purchase of the trade goods and the sale of the furs.[7] Any delays, either within the transport network or in the trading transactions, would inevitably entail a postponement of the end shipment, and in all probability another year would have been involved.

Associated with this factor of thetime lag, was the cost of maintaining the Peace River posts, and if it had not been for the importance of all these posts in the economy of the fur trade as a whole, many of them would have been closed down at an earlier date. An illustration of the goods required for the maintainance of the posts on the Peace River is given by Innis.[8] In 1815, the values of the goods at the various posts were as follows: Fort Chipewyan had goods on hand valued at 29,355 livres and articles in use 1,349 livres;[9] Fort Vermilion, goods on hand 9,883 livres, articles in use 342 livres; Dunvegan, goods on hand 20,177 livres, articles in use 629 livres, and St. John, goods on hand 4,207 livres, articles in use 524 livres. The total for the Peace River posts was over 66,000 livres, and if two years were admitted as the length of time necessary to realise on the furs exchanged for these goods, the interest charges must have been quite considerable.

As the lines of communication lengthened, these higher investments and interest charges must have been among the factors involved in the amalgamation of the Montreal traders into the North West Company in 1784. They would also have caused serious concern in the competition which took place between the

---

[7] E.E.Rich, The History of the Hudson's Bay Company, 1670 - 1870, Vol.2, 1763 - 1870, London, 1959, p. 187.

[8] Innis, op. cit., p.230.

[9] One livre was equal to one shilling, Halifax currency, which was probably equivalent at the time to the sterling value. See Innis, op. cit., p. 230.

Hudson's Bay Company and the NortheWest Company in the second decade of the nineteenth century. This competition was eventually settled in 1821, with the amalgamation of the two companies.

The second major difficulty concerned with the expansion of the fur trade to the northwest, was that of supplying the boats and fur trading posts with sufficient provisions. This required a highly developed organisation, of both transportation and personnel. An indication of this demand for supplies is shown by the fact that the canoes, each of which was capable of carrying four tons, had to transport provisions amounting to about one third of their total load.[10] This was sufficient to carry them as far as the Athabasca River, where supplies could be obtained from buffalo and other game. This meat was dried, mixed with grease and transported as pemmican. At a later date, the fur trade was supported at intervals, by agricultural development, but in the early years the buffalo was more important, especially in the Athabasca district.[11]

METHODS OF TRANSPORT

The earliest type of carrier used by the fur traders on the routes to the interior of the country was the birch bark canoe. These canoes had originally been used by the Indians, but the Europeans adapted them for their own purposes. They consisted of various sizes, the most common ones measuring thirty feet long and four and one half feet wide, with high rounded ends. They combined speed with carrying capacity and were light in weight, which made them comparatively easy to portage past un-navigable sections of the waterways. They

---

[10] G.P.deT.Glazebrook, A History of Transportation in Canada, Vol.1, Toronto, 2nd. Ed. (rev.), 1964, p. 41.

[11] Innis, op. cit., p. 289.

were strong enough, however, to stand the rapids through which they were steered.

This type of carrier was the one used by the North West Company out of Montreal. The larger canoes were used up to and on the Great Lakes, but west into the interior the smaller canoe was found to be the most suitable. Their cargoes consisted of one thousand pounds of provisions and sixty packages of merchandise for trading, each package weighing from ninety to one hundred pounds.[12] To each canoe, there were eight men and their personal baggage, which amounted to a total of about four tons to each canoe.

As the trade expanded further west, the canoe brigades steadily increased in size. The early North West Company traders sent out brigades of three or four large canoes from Montreal, accompanied by smaller ones. These numbers were steadily increased, until in 1800 a typical brigade which left Montreal consisted of thirty canoes, divided into three parties. Later, when the North West Company was at the height of its power, the brigades numbered from ninety to one hundred large canoes, accompanied by smaller ones.[13]

The Hudson's Bay Company up to 1770, did not expand into the interior, but carried on their trading by inducing the Indians to bring their furs to York Factory. When competition increased however, inland posts were established, and canoes were the most natural method of transportation to use. The Hudson's Bay Company canoemen were not as skilled as their counterparts in the North West Company, and York boats were introduced by them, as an alternative method of transportation. These York boats were pointed, flat bottomed vessels, thirty five to forty feet long. They were seaworthy in the storms of Lake Winnipeg, but also light enough to be hauled over the portages. Each

---

[12] Alcock, op. cit., p. 63.

[13] Ibid., p. 64.

boat was manned by a crew of eight or ten, and could carry a cargo of five tons. They were propelled by either oars or sails, although when moving upstream the vessels were commonly tracked by the crew, using a long towing line from the bank. The portages around the rapids and falls were cut into regular roads covered with logs, over which the boats were hauled. These York boats travelled mainly between York Factory and Norway House, where the goods were transferred into the smaller canoes for transportation to the interior.

These two methods of transportation were the ones used by the fur traders up to 1821, when the two companies amalgamated. The North West Company with the longer haul, used canoes exclusively and carried their trade as far west as the Peace River and the western Rockies. At the same time they were aware of their disadvantages with regard to the lengthening communications. The Hudson's Bay Company, on the other hand, used the larger York boats and suffered from weaker techniques of transportation inland. When competition increased prior to 1821, the Hudson's Bay Company suffered but were able to survive, owing partly to improved techniques of communications, and partly to lower costs with the shorter distances.[14]

With amalgamation of the two companies in 1821, there was a major change in the method of transportation, and York boats were used as the main transport media in many areas, rather than canoes. They were found to be safer than the canoe, and resulted in a substantial saving in both personnel and wages. In the Athabasca district, however, the use of York boats was not altogether successful, and canoes continued to be the dominant transport carrier for many years.

---

[14] The Hudson's Bay Company were able to carry goods to the interior at less than half the cost than the North West Company. See W.S.Wallace (ed.), "Documents relating to the North West Company," Toronto, 1934, p. 328.

Throughout the west after 1821, an elaborate system of communication was gradually being built up by the Hudson's Bay Company. The core of this system was Norway House on Lake Winnipeg. The outlet for the Athabasca trade had been mainly through Fort Chipewyan and Montreal, due mainly to the distances involved and the necessity of supplying regular provisions to the outlying posts.

These systems of communication had been designed for a relatively unpopulated country, and for the carriage of standard goods with a small number of passengers. They were dependant primarily on the natural waterways, and the sections which had been traversed on foot had always been regarded as portages. After 1821, however, two changes took place; the expansion of settlement in the Red River area, and later, the expanded use of the American railroad system to the south.

With the settlement of the Red River colony, to the south of Lake Winnipeg in the early nineteenth century, there came great improvements in the methods of transportation to the Athabasca district posts. Part of the scheme of reorganisation in the settlement of this colony had been to give a source of provisions to the outlying posts at greatly reduced costs,[15] and in addition to avoid the heavy expense involved in bringing everything from England to re-ship from York Factory. This development led the Hudson's Bay Company to abandon the bay posts as the only entrance to their territory, and to concentrate on land routes to the Athabasca department. A trail came into use, running from Fort Garry at the junction of the Red and Assiniboine Rivers to Fort Edmonton on the North Saskatchewan River, a distance of

---

[15] A.S.Morton, A History of the Canadian West to 1870-71, Toronto, n.d., p. 532.

890 miles.[16] This trail was used by Red River carts, which were two wheeled carts built entirely of wood and drawn by a single animal, either ox or horse. These carts could carry from eight hundred to one thousand pounds of freight, could travel fifteen to twenty miles per day, and were used in brigades often one hundred strong.[17] From Fort Edmonton the goods were taken to Chipewyan via Athabasca Landing. Transportation from this point on the Athabasca River, was by river scows, which were special crafts built for drifting downstream. These boats were flat bottomed, about fifty feet long and twelve feet wide, narrowing to eight feet at the base. During the time that the Athabasca River remained the important route to the north, as many as one hundred scows were run annually from Athabasca Landing to Fort Chipewyan. As a rule these scows made only one trip, and were broken up for lumber on reaching Lake Athabasca.[18] This alternative route via Edmonton and Athabasca Landing, led to the partial abandonment of the Methye Portage route after 1883, and eventually, with the improvements to the methods of transportation, all the supplies for the northern fur trading districts came by way of this route.

The second change which took place in the methods of transportation was the result of the expansion of the American railroads from the east. In 1860, the Hudson's Bay Company began to make use of these rail lines. A stage line was established, between St. Cloud on the Mississippi River and Georgetown on the Red River, and from there, the goods were transported by water to Fort Garry. As a result of this change, Fort Garry became the main point of entrance to the Canadian north, and York Factory declined as the

---

[16] Alcock, _op. cit._, p. 76.

[17] _Loc. cit._

[18] Alcock, _op. cit._, p. 80.

headquarters from which goods were dispatched to the outlying posts.

Another method of transportation which was used in the later fur trading years, was the steamboat. The first boat of this type was used in 1809, between Montreal and Quebec,[19] but it was not until 1877 that a steamer service came into operation on the North Saskatchewan as far as Edmonton. By 1822, however, these steamboats were in operation on the Peace, Athabasca, and Mackenzie Rivers.[20]

ESTABLISHMENT OF POSTS ON THE PEACE RIVER

Fur trading posts on the Peace River were established initially by the North West Company in the late eighteenth century. Before the white man penetrated the region, however, the Indians had been using the natural waterways to trade with the two companies in the east. In addition to the main route via the Athabasca and Saskatchewan Rivers into Lake Winnipeg, which the Montreal traders subsequently used, the Indians had been making extensive use of trails, one of which led from the site of modern Peace River town to the west end of Lesser Slave Lake,[21] and another between this Lake and Dunvegan (see Figure 4).[22] These two trails were not used by the white man for many years after they entered the region, as the trader appeared to have kept mainly to the River itself, rather than travelling overland. In addition, many other trails were in regular use by the Indians as they travelled between lake and prairie in search of fish and game. It is incorrect

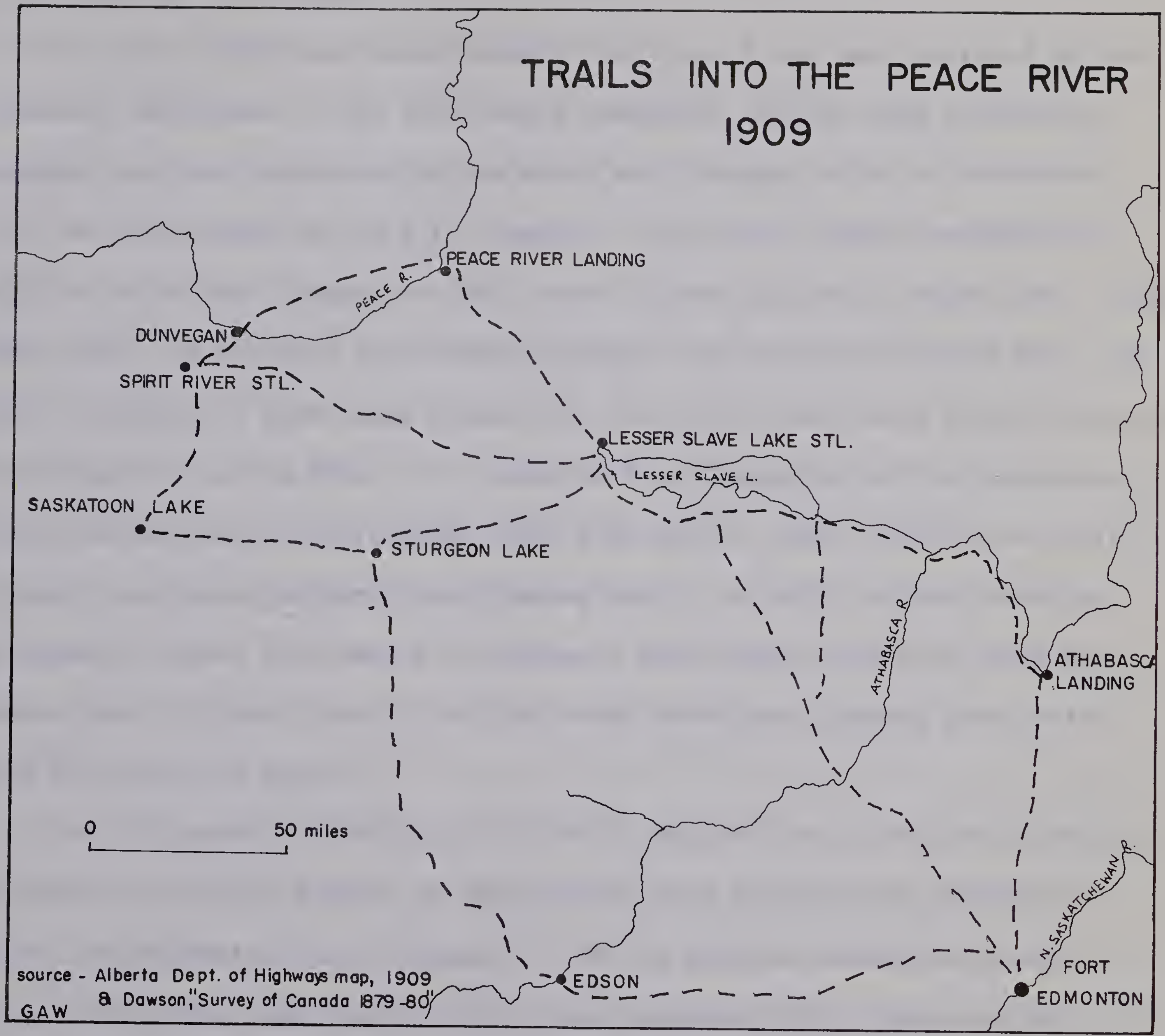
---

[19] Glazebrook, op. cit., p. 67.

[20] Alcock, op. cit., p. 82.

[21] J.N.Wallace, The Wintering Partners on Peace River, Ottawa, 1929, p. 19.

[22] D.W.Harmon, A Journal of Voyages and Travels in the Interior of North America, Toronto, 1911, p. 143.


TRAILS INTO THE PEACE RIVER 1909

source - Alberta Dept. of Highways map, 1909 & Dawson, "Survey of Canada 1879-80"

GAW

Figure 4

therefore, to think of the white traders as having newly established the routes which they used, as it is more likely that they made use of existing trails, established by the Indians.

The posts which were established on the Peace River were included in the Athabasca department of the fur trading companies, and for many years they remained the sole possession of the North West Company, with the exception of a few established by the X.Y. Company. This latter company amalgamated with the North West Company in 1805, after a short period of competition. From about 1810, the Hudson's Bay Company expanded into the west from the Bay, and active competition took place between the two, with rival posts being established close together on the River. For example, Fort Chipewyan and Fort Wedderburn, Fort Vermilion and Colville House, Fort Fork and St. Mary's House, the latter in each case being the North West Company fort. In 1821, the two companies amalgamated, under the name of the Hudson's Bay Company, and many posts were closed down. In most cases it was the older North West Company posts which were kept open for trade.

Fort Chipewyan, established in 1788 on the south shore of Lake Athabasca and moved to the north shore in 1800, served as a base for the Athabasca, Peace, and Mackenzie River brigades.[23] On the prairies around the Peace River, and in the bush country west of the Athabasca River, pemmican was secured to supply the trading brigades on their travels. Depots for the storage of this valuable food supply were established all along the waterways. Fort Chipewyan served as one of these depots, and was stocked with pemmican from the Athabasca and Peace River Areas, in addition to local supplies of fish from the Lake itself. It therefore served as an important distribution

---

[23] Wallace, The Wintering Partners ...., op. cit., p. 50.

center for much of the northern district. With the extension of exploration and trade further west into New Caledonia,[24] Chipewyan became more important as a wintering center, as it became increasingly difficult to travel to the more outlying posts in the course of one season.[25]

With competition from the Hudson's Bay Company, the fur trade suffered as a whole. The North West Company had protected the Athabasca District with a virtual monopoly, and the effects of competition were felt with a reduction in both furs and food supplies.[26] It was reported that in 1803, only one hundred and eighty two packs of furs were shipped out from the department through Chipewyan, whilst in 1799 the total had been six hundred and forty eight packs.[27] By 1816, the Hudson's Bay Company had established a rival Fort, Fort Wedderburn, on an island opposite Chipewyan, and competition was intensified. With amalgamation, however, Chipewyan continued under its new owners and the rival Fort was closed down. It continued to be the center of supplies for the district, provisioned by meat from the Athabasca and Peace River posts. In addition it became a center for the construction of York boats.[28]

The earliest establishment on Peace River itself was in the neighbourhood of the present Fort Vermilion, above Vermilion Falls. This Fort, established

---

[24] New Caledonia was the fur trading district established west of the Rockies.

[25] A brigade left Rainy Lake to the west of Lake Superior on July 26, 1808, arriving at Chipewyan on September 7. To carry on further west from there in the same year would have been impossible, due to ice blockage See Harmon, op. cit., pp. 177-178. The Peace River was frozen over from mid-November to the beginning of May. See W.T.R.Allen, Break-up and Freeze-up Dates in Canada, Canada, Dept., of Transport, Meteorological Branch, Cir. 4116, October, 1964.

[26] Innis, op. cit., p. 274.

[27] Morton, op. cit., p. 517.

[28] Innis, op. cit., p. 292.

in 1786,[29] was first mentioned by Alexander Mackenzie in his journal for 1792. The Post was subsequently closed and several others were built and closed down near the same site. Wallace reports that the Post on the modern site of Fort Vermilion, was established in 1800, and that in 1802 it was one of the nine Posts that were in operation on the Peace River.[30] There is a certain amount of confusion with regard to the position of the site, but it must be remembered that during the early years of occupance of these outlying posts, they were abandoned and re-established virtually year by year, depending on the state of the fur trade. In 1815, however, it is reported that there were four establishments on the river, one of which was Fort Vermilion.[31] In addition, in 1818, Colville House was settled by the rival Hudson's Bay Company, to be abandoned in 1821, in favour of the older Fort Vermilion.

The next post to be established on the River, was Rocky Mountain Fort, built in 1798, six miles above the modern site of Fort St. John.[32] This Fort was built to serve the fur trade as it extended west of the Mountains, as was Rocky Mountain Portage, built in 1805 near the site of modern Hudson Hope. In 1806, Rocky Mountain Fort was closed down, being replaced by Fort St. John, established in the same year. This Fort appears to have been in continuous occupance up to 1824, when, together with Dunvegan, it was closed down, as a result of trouble with the Indians, and not re-opened until 1858.[33]

---

[29] Innis, op. cit., p. 201.

[30] Wallace, The Wintering Partners ...., op. cit., p. 62.

[31] Innis, op. cit., p. 275.

[32] Wallace, The Wintering Partners ...., op. cit., p. 52.

[33] Morton, op. cit., p. 705.

On, or near, the site of the present town of Peace River, the post of Fort Fork was established in 1792. This post was occupied intermittently until 1805, when it was closed down in favour of Dunvegan, situated fifty seven miles upstream. Similarly, in 1818, St. Mary's House, a Hudson's Bay post, was established in the same area as Fort Fork. This was closed down in 1821, again because of the prominence of Dunvegan.[34]

Dunvegan, founded in 1806,[35] has one of the longest records of continuous occupance in the Athabasca district, as it was at the center of a very important source of game supply for New Caledonia. It was not until about 1880, that it lost its importance, due to the depletion of the buffalo on the plains. In 1825, it was closed down, together with Fort St. John, but re-opened in 1828, to become the most important post in the Upper Peace River region.

The expansion of the fur trade to the Pacific coast, occurred in the early nineteenth century, and the form it took was the establishment of posts, which served as centers from which the coast could be reached. The original settlements on the Peace River, took this form, and resulted as much from exploration, as from the actual expansion of the fur trade. It was realized at an early date, that the prairies, stretching back from the river, abounded with game, and the posts subsequently became important suppliers of pemmican, both for the Pacific brigades, and for shipping to Fort Chipewyan, for re-distribution to the Mackenzie and Athabasca posts. This food supply became so important, that some posts were more significant in this respect, than for the actual value of the furs, which they shipped. With the depletion of the buffalo herds on the open plains, many of the posts, including Dunvegan,

---

[34] J.G.MacGregor, The Land of Twelve Foot Davis, Edmonton, 1952, p. 141.

[35] Wallace, The Wintering Partners ...., op. cit., p. 71.

declined.

With the abandonment of the Methye Portage route, after 1860, the position of the Peace River posts changed, from that of a major source of furs and provisions, to posts which served as stopping centers for the brigades, en route to the Pacific. Associated with this decline, was the growing importance of Edmonton and the North Saskatchewan River route.

MODIFICATIONS IN THE FUR TRADE

After 1821, several modifications took place within the organisation of the fur trade. The first of these modifications was concerned with the self sufficiency of the individual posts, allied with the decline of the buffalo, and with the initial experiments in agricultural production.

The individual trading posts on the Peace River were encouraged to be self sufficient in their supplies of food, in order to reduce the quantity of incoming traffic, which was far in excess of the outgoing. In this way, reductions could be made in the transportation costs, which were taking up such a large proportion of the total fur trade revenue.[36] The demand for supplies of food, of small bulk and high food value, such as pemmican, remained, and the Peace River posts, especially Dunvegan, continued to supply the New Caledonia district and the Mackenzie River department. By 1850, the production of pemmican was declining, as earlier, the herds had been depleted by a hard winter,[37] and in addition, those which were left were receding further away from the forts.

This deficiency became so urgent that in most departments, agriculture

---

[36] Innis, op. cit., p. 301.

[37] MacGregor, op. cit., p. 206.

became a more important source of supply for provisions, and in 1833, it was decided that:

> In order to save the expense of transporting Flour from the Depot to Athabasca or Mackenzie River districts, it is recommended that the Gentlemen in charge of Posts in Peace River, where the climate and soil are favourable to cultivation, be directed to devote their attention to that important object forthwith; as it is intended that those districts shall depend on Peace River alone for their Flour.[38]

It had been realized for many years that agriculture was possible in these remote areas, but it was not until the shortage of pemmican became a reality that produce from the area attained any commercial value. As early as 1809, there are references to the excellence of the soil, and Harmon, in his journal, gave two instances, at Fort Dunvegan:

> Friday, 21 July, 1809 - We have cut our barley and I think that it is the finest that I ever saw in any country - the soil on the points of land along this river (the Peace River), is excellent.[39]

> Wednesday, October 3, 1810 - We have taken our potatoes out of the ground, and find that nine bushels which we planted the 10th of May last, have produced a little more than one hundred and fifty bushels ... I am of the opinion that wheat, rye, barley, oats, pease etc., would grow well in the plains around us.[40]

Others, however, were not as optimistic as Harmon, and it was noted in a journal of around 1880 that "the area fit for cultivation only comprises a few small river side flats in many thousands of square miles."[41]

The second major change after 1821, was the stabilization of the Forts. With the end of competition, many of the Forts, which had been built adjoining

---

[38] E.H.Oliver (ed.), The Canadian North West, Publication of the Canadian Archives, No. 9, Vol. 2, Ottawa, 1915, p. 692.

[39] Harmon, op. cit., p. 147

[40] Ibid., p. 152.

[41] H.S.Somerset, The Land of the Muskeg, London, 1895, p. 30.

one another, were closed down. Forts, standing at strategic positions, such as Chipewyan and Dunvegan, remained static, while the smaller ones were removed. The tendancy was to keep the posts at a considerable distance apart, and to throw on the Indians the burden of bringing their furs in to trade. This was far removed from the situation in the early part of the century, when small forts were set up in all areas, where furs appeared to be in abundance.

Another major change in western Canada as a whole, although not yet as evident in this area, was the growing industrialisation and settlement, especially after 1870, when the extension of the railway to the prairies and the Pacific coast was planned.[42] It must be realized, that it was in the interests of the Hudson's Bay Company to preserve the Peace River region for fur bearing and food producing animals. The existence of these animals in large numbers, assumed a relatively scant population, which must not be increased by agricultural and industrial expansion. It would therefore be in the company's interests to hold on to the monopoly in trade and service goods, and restrict the population to trappers, Indians, and a few farmers, who could raise food for the small population.

Nevertheless, settlement was gradually advancing westward, and the improvements in transportation routes and methods, accentuated this movement. It was not until 1914, that the railway reached the Peace River area, but it was many years before this, that the influence was felt by the fur trader, operating within the area.

SUMMARY

The original establishment of the fur trading posts on the Peace River, was partly due to exploration, and partly due to competition between the two

---

[42] Glazebrook, Vol 2, op. cit., p. 47.

major trading companies and the consequential expansion to discover new areas of trade. Following this original expansion, the posts became more important for their stocks of game and agricultural produce, until eventually their importance declined, with the improvements in types of transport, and the rising importance of new routeways from the south.

In this section, the emphasis has been on the development of both routeways and methods of transportation, from the establishment of the posts, to the time when the fur trade was declining, with increasing settlement spreading westward. This initial phase of transportation development, based entirely on the use of the natural waterways of the country, has been associated with an economy based primarily on the fur trade. The next phase is associated with increasing settlement, which accompanied the expansion of agriculture across the western prairies,and north into the Peace River region.

CHAPTER III

GROWTH OF TRANSPORTATION - 1900 TO 1948[1]

The movement of settlers into the Peace River region, was dependent upon the increasing density and expansion of settlement in the southern half of the Province. Between 1901 and 1911, the population of the Province had increased from 73,022 to 374,295, and the area under crops from 189,483 acres to 3,391,983 acres. This rapid expansion, was in part due to the spread of the railway, and in part to the existence of a market for wheat, based upon the industrial development in North West Europe. In 1885, the Canadian Pacific Railway Company (C.P.R.), had completed their trans-continental line, running through the southern part of the Province, with a branch line to Edmonton, completed in 1891. With this direct connection to the east, from the western prairies, the Peace River region became more accessible from the south, and from 1901 onwards, a steady flow of settlers penetrated the area.

EARLY ROADS

Improvements in transportation and communications materially altered the supply of provisions to the area. With the agricultural expansion to the south, and the increase in the production of foodstuffs, the Peace River, became more dependent on supplies from the southern part of the province, in order to supplement the local game, supplies of which were declining rapidly.

This increasing dependence on imported foodstuffs, necessitated an improved transportation system from Edmonton. Before the railways penetrated

---

[1] The year 1948 has been selected, because this was the time in which the majority of the trucking companies commenced operations into the region. Before 1948, the railway held the monopoly on the movement of goods, whilst after this date, competition intensified.

the area, in 1916, two main overland routes were used by the settlers, and by the Hudson's Bay Company, to haul goods into and out of the area. The most important one, was the Lesser Slave Lake route. This ran north from Edmonton to Athabasca Landing, a distance of ninety miles, on a trail which had been cut through in 1883 by the Hudson's Bay Company.[2] From this depot, goods and passengers were transported on the Athabasca and Lesser Slave Rivers, to a point on the west end of Lesser Slave Lake (Grouard), and from there, on the old Indian trail to Peace River Crossing, at the confluence of the Peace and Smoky Rivers (see Figure 4). Supplies for all the Peace River settlements, in addition to the Mackenzie and Athabasca posts, were also freighted over this route.[3]

The other route, ran north from Edson to the Sturgeon Lake area, and served the southern Peace area, around Grande Prairie. This trail, had been cut through from the railhead, west of Edmonton, when further trans-continental lines were being constructed,from 1905 onwards (see page37). This trail was not a success, however, as although the distance involved to reach the Peace country was shorter, the route was abandoned after only a few years of use, owing to the extremely bad conditions en route.[4]

These early trails were in bad condition for many months of the year, and in some areas proved nearly impassable for vehicles of any kind. An account of travel on the Grouard to Peace River Crossing section in 1885, showed that "the road beneath, was an oozy swamp of black mud, untouched by the sun . . .

---

[2] E.L.Myles, The Emperor of Peace River, Edmonton, 1965, p. 25

[3] H.A.Innis, The Fur Trade in Canada, Toronto, 1956, p. 344.

[4] For conditions of travel on the Edson trail, see A.M.Bezanson, Sodbusters Invade the Peace, Toronto, 1954.

great pits and dikes furrowed its surface."[5] Because of these bad travelling conditions, it took many days to reach Peace River Crossing from Edmonton. The Athabasca trail to the Landing, took on an average, four days,[6] and from Grouard to Peace River Crossing, another seven days.[7] Adding to this, the boat journey of seven to eight days, the total trip would have taken just under three weeks. This gives an indication of the lack of impetus that the first farmers in the district must have had, as in addition to the time factor, heavy loads could only be hauled in winter, when both the trail and the Lake were frozen.

With the extension of settlement in the southern part of the province, Edmonton became the main distribution center, for both incoming supplies and outgoing furs, to and from the Peace River. The region was now far more accessible from the east via the C.P.R., and Fort Chipewyan lost its importance as the main outlet. This improved access provided the impetus for the settlement of the area. The suitability of this part of the country for agriculture, initially proven by the fur traders on their small plots, was now being demonstrated by the missionaries, who were penetrating the area.

The first agricultural settlement of any importance, was at Shaftesbury, on the north bank of the River, near the present town of Peace River.[8] This settlement, a Hudson's Bay post until 1896, served as a base for the expansion of agriculture on the higher plains, away from the river valley. Many other

---

[5] H.S.Somerset, The Land of the Muskeg, London, 1895, p. 18.

[6] Bezanson, op. cit., p.7.

[7] Somerset, op. cit., p. 24.

[8] C.A.Dawson, The Settlement of the Peace River Country, Vol. 6, of Canadian Frontiers of Settlement, ed. W.A.Mackintosh and W.L.G.Joerg, (9 Vols.), Toronto, 1934, p. 18.

missionaries were also established on, or near, existing trading posts, and they all experimented in crop production, at first with varying degrees of success. The growth of agricultural settlement,however, was slow before 1900. The farmers who did penetrate the region, in all probability, had been discouraged by the rough land west of Edmonton, when the railway extended past that center, and had been encouraged to settle in the areas to the north. In addition, many of the gold seekers, in the Klondike rush of the 1890's, took up land in the Peace River plains, especially west of the Shaftesbury settlement.[9] The majority of these settlers, came via the Athabasca trail, and Lesser Slave Lake route, and a great number of them populated the area around Grouard, on the west end of the Lake. In 1906, out of a total population, in the Peace River region, of 3,901, more than 1,700 were living in that area alone.[10]

By 1911, the population had increased to 7,557, and there was a movement west from the lakeside. Clusters of agricultural settlements were established at Grande Prairie, Spirit River, Lake Saskatoon, Beaverlodge and Pouce Coupe,south of the River, and Peace River Landing, together with Shaftesbury settlement, serving areas north of the River. These settlements were isolated from each other by large tracts of uninhabited land, but were connected by trails, which were being improved year by year.

The importance of the area was gradually being realized, as by 1909, two ferries had been installed by the provincial government, one at Peace River Landing, in 1908, and the second at Dunvegan, the following year. In addition,

---

[9] Ibid., p. 22.

[10] This figure included personnel involved in transporting goods over the trail to Peace River Crossing, these being kept at Grouard primarily for this purpose,by the Hudson's Bay Company. See Innis, op. cit., p. 344.

from 1912 onwards, trunk roads were being constructed by the government. The earliest of these, were from Grouard to Peace River Landing; from Peace River Landing to Dunvegan; from Spirit River to Beaverlodge; from Athabasca Landing to Lesser Slave Lake; from Grouard to Spirit River and from Dunvegan to Grande Prairie (see Figure 4).[11] These roads were surfaced with earth, and were impassable at certain times of the year. The government attempted to maintain them regularly, and they were frequently dragged over, to fill in the ruts caused by wheel traffic.[12]

These roads were built to connect all the main settlements, and to give them an outlet to their market points by the most direct route. The general principal involved was:

> that the settler would be able to find a way to reach his nearest road, and that as the country is brought under cultivation, and the farms become more productive, the people would be perfectly able and willing to maintain and improve the roads provided them and to extend them according to their requirements.[13]

The situation in 1916, was therefore of increasing settlements, aided by provincial expenditure on improvements to local roads. Nevertheless, these roads were still not adequate for the farmers who were attempting to market their crops. Those who did attempt it, found that the labour and costs of hauling their produce overland, was proving too expensive. The result of this was that demands were made for improved transport facilities.

---

[11] Province of Alberta, Department of Public Works, Annual Reports: 1906 - 1916, Edmonton, Various Years,

[12] Ibid., 1913, p. 8.

[13] Ibid., 1912, p. 8.

EXTENSION OF THE RAILWAYS

Construction of the Trans-continental Railways

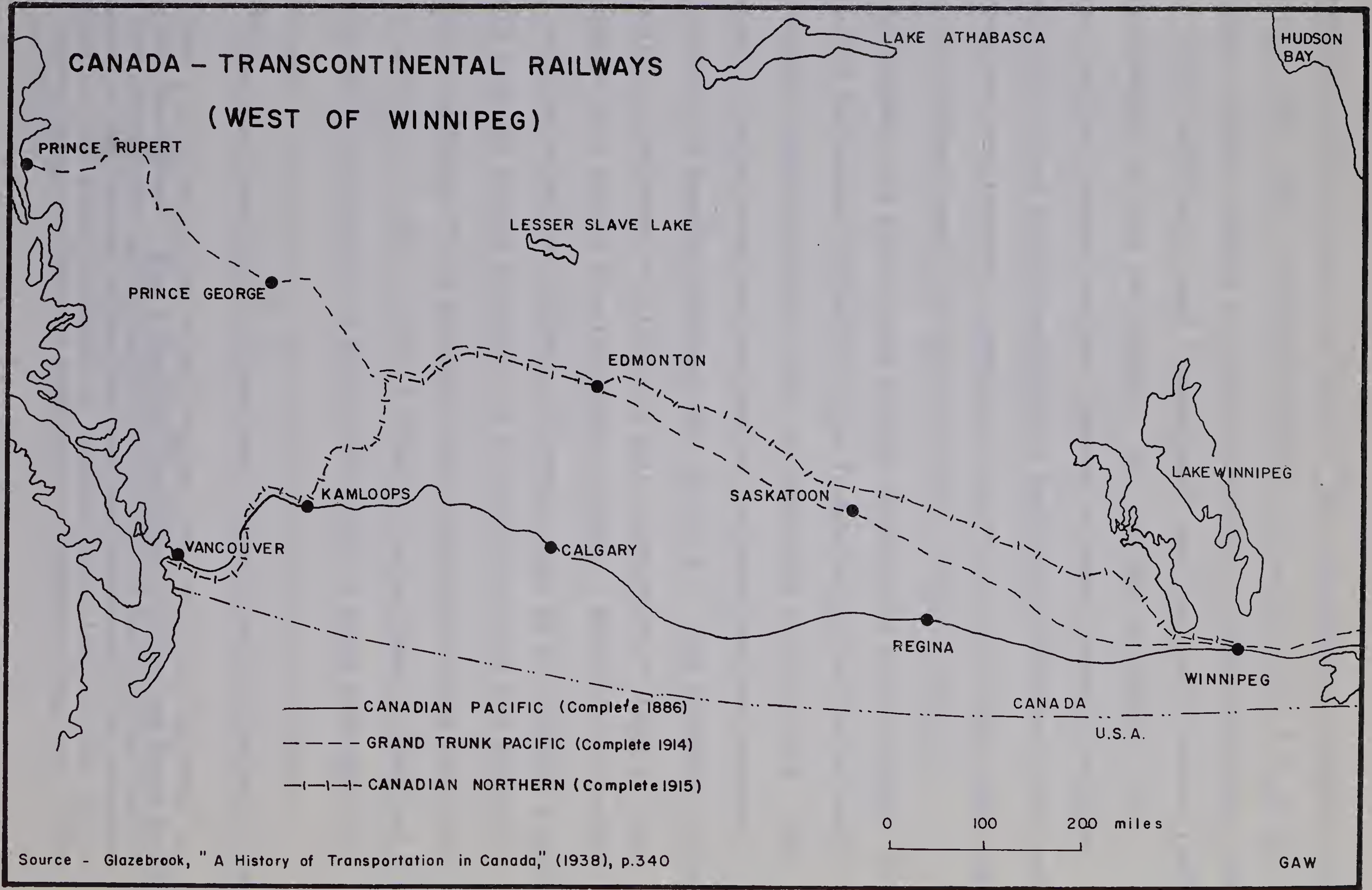
Although before confederation, prospects for the expansion of agriculture had been uncertain, after 1867, there was a strengthening belief that agricultural expansion would take place. This belief stimulated the federal government to undertake several important and costly measures, which could only be justified in the event of this expansion being attained. The western territories were secured from the Hudson's Bay Company in 1869; land settlement schemes were devised, and immigration was encouraged. The costliest of these developments, however, was the construction of the trans-continental railway, which was completed in 1886. This railway was built, maintained and operated by a private syndicate, and named the Canadian Pacific Railway Company, although in actual fact, the building was well fortified by government grants of cash and land.[14] From Winnipeg, the line was built through Regina and Calgary, penetrating the Rockies at the Kicking Horse Pass, and ending at Vancouver, on the west coast (see Figure 5). From Calgary, a branch line was completed, north to Edmonton, in 1891.

In the early years of operation, the C.P.R. felt that only light traffic would be expected from these sparsely settled areas, and since it was obviously costly to operate through the prairies, due to the distances involved, freight rates had to be higher than in the east.[15] With this outlet to both coasts, however, the population, land settlement and associated freight

---

[14] For a detailed description of the project and construction of the C.P.R., See G.P.de T.Glazebrook, A History of Transportation in Canada, Vol. 2, Toronto, 2nd. ed. (rev.), 1964, pp. 26-90.

[15] A.W.Currie, Economics of Canadian Transportation, Toronto, 1954, p. 42.



CANADA – TRANSCONTINENTAL RAILWAYS
(WEST OF WINNIPEG)

Source - Glazebrook, "A History of Transportation in Canada," (1938), p.340

Figure 5

movements from the prairies, rose rapidly,[16] and dissatisfaction resulted from these high rates. The concessions which had been made to the C.P.R. by the government had been adequate for them to construct the trans-continental line, but a railway operating in such a monopolistic position, had a certain freedom in determination of rates and services. The long haul to markets of the exports, and the distance from the sources of supply, resulted in higher rates, which in turn proved unconducive to agricultural expansion in the west. Modifications were therefore imperative, in order that the railway might better serve its intended purpose, in regard to western economic expansion.

Two changes took place, which directly affected the prairie economy, around the turn of the century; reduction in the freight rates, and the decision to build further trans-continental lines, in competition with the C.P.R. The reduction in freight rates was initiated by the Crows Nest Pass Agreement, in 1899, between the Dominion government and the C.P.R.[17] The government granted the railway a cash bonus of $11,000 per mile, plus grants of land, for the construction of a railway from Lethbridge in Alberta, through the Crows Nest Pass, to Nelson in British Columbia, in order to open up the valuable mineral areas in southern British Columbia, and to prevent the area from becoming an economic tributary of the American lines, which were entering from the south. In return for this, the C.P.R reduced existing rates on grain and flour, from all points in the west, to ports in the east, by three cents per one

---

[16] In Alberta, the population rose from 73,000 in 1901, to 185,000 in 1906.

[17] For a detailed account of the original Crows Nest Pass Agreement and subsequent developments, See Crows Nest Pass Rates on Grain and Grain Products, Joint submission of the government of the Province of Saskatchewan, the government of the Province of Manitoba, and the government of the Province of Alberta, to the Royal Commission on Transportation, 1951, Ottawa, 1951. Also Canada, Report of the Royal Commission on Transportation, 1951, Ottawa, 1951, pp. 238-252.

hundred pounds.[18] In addition, rates on various inbound commodities from the east were also reduced. In brief, in return for a cash subsidy, plus land grants, the C.P.R. reduced rates on the chief export of the region, and on inbound settlers requirements. The original agreement provided the reductions to be in effect over an initial two year period, but the rates were still further reduced by 7½ per cent in 1902, because of the competitive rates which were introduced by the Canadian Northern Railway.[19]

The Crows Nest Pass Agreement on freight rates, was subsequently abrogated, due to the inflation, during and after the 1914 - 1918 war, but was restored to the 1899 level again, in 1925, on grain products only. In addition, in 1927, the rates were reduced on grains moving through Pacific ports, from the west, to the Crows Nest Pass level. Since the 1920's, moves have been made, to nullify the rates, especially by the railways,[20] but they are still in effect, and as pointed out in 1950, "The grain rates fixed by the Crows Nest Pass Agreement, constitute one of the basic conditions upon which western agricultural economy was established and developed."[21]

Several reasons can be given for the decision, in the late 19th. century to build further trans-continental railways. About this time, there was increasing prosperity, in Canada, and with this prosperity came increased immigration, to settle on the free homestead areas, which were being created in the west. Immigration rose from 50,000 in 1902, to 100,000 in 1903, and

---

[18] This amounted in some districts to a 19% reduction, See Currie, op. cit., p. 42.

[19] Crows Nest Pass Rates...., op. cit., p. 14.

[20] Canada, Report of the Royal Commission to inquire into Railways and Transportation in Canada, 1931-32 , Ottawa, 1932.

[21] Crows Nest Pass Rates...., op. cit., p. 17.

reached over 400,000 in 1913.[22] Allied with the increase in immigration, was the expansion of agricultural land and the number of farms in the west, although this expansion was as much a result of the C.P.R rail line, as it was a cause of further railway development (see Table I).

TABLE I - AGRICULTURAL EXPANSION IN ALBERTA, 1901 TO 1911

	1901	1911
Total Population	73,022	374,295
Number of Farms	9,479	60,559
Area of Occupied Farms (acres)	2,735,630	17,359,333
Area under crops (acres)	189,483	3,391,993

Source: Canada, Dominion Bureau of Statistics, Census of Canada, 1961, (Agriculture), Vol. V, Part 3, Table 2

Faced by this expansion in both settlement and agricultural production in the west, and the associated growth in freight traffic, the C.P.R. made efforts to keep pace with the demands. Further branches were built, with the result that a heavier burden was laid on the main line to the east. Associated with this growth, was the desire to provide more adequate transportation facilities for the west. Naturally, the companies who were interested in creating additions to the rail net, were concerned with obtaining a share of the traffic for themselves, traffic which had already been created by the C.P.R.

Another reason for the decision to construct further lines, came with the dissatisfaction, which existed in the western part of the country, over

---

[22] Glazebrook, *op. cit.*, p. 119.

the lack of railway competition.[23] It was hoped that this railway monopoly, which admittedly had been partly eased by the Crows Nest Pass Agreement, could be cut off, with the construction of competitive lines.

The final reason, was purely political, stemming from the general optimism of this period of prosperity in Canada. The Liberals, who had come into power in 1896, were in a strong position to carry out this popular policy of rapid rail expansion in the west. They can be criticized, however, for their lack of caution in allowing two companies to be involved in competition and construction of further trans-continental lines, although, on the other hand, they can be complimented in their desire to see the increased flow of Canadian trade throughout the length of the country.

Two companies, the Grand Trunk and the Canadian Northern, were interested in constructing further trans-continental lines. There is much confusion, as to the government railway policies, at this time,[24] but the fact remained, that these two companies were allowed to build independent lines, to the Pacific coast. Before construction commenced, the Grand Trunk had a network of lines throughout Ontario and Quebec. The Canadian Northern, on the other hand, had a number of lines in Manitoba and Saskatchewan, but none in the east of the country. The logical solution would appear to have been either, co-operation in construction, or amalgamation, but this did not come about. The newly formed Grand Trunk Pacific Railway (G.T.P.) completed its line in 1914. The line passed through Edmonton, pierced the Rockies at the Yellowhead Pass, and ran by the Fraser River, to the Pacific coast at Prince Rupert, where a new port was established (see Figure 5). The Canadian Northern line, however,

---

[23] Canada, Report of the Royal Commission ... 1931-32, op. cit., p. 78.

[24] Glazebrook, op. cit., p. 126.

which had been constructed as far as Edmonton by 1905, after passing through the Yellowhead Pass, ran south to Vancouver, and was completed by 1915. An interesting point, with regard to the selection of these routes, was that earlier, it had been intended to use either the Pine River or the Peace River Pass, through the Rockies.[25] Finally, these two routes were passed over in favour of the Yellowhead Pass route, which had already been fully surveyed in 1871, as a possible route for the C.P.R.[26]

The subsequent history of these two companies, shows that before construction was completed, the war broke out. With the war, immigration ceased, and investments stopped, and although the two companies completed their lines to the Pacific coast, they were in financial difficulty from the beginning of operations. In addition, they found that adequate revenues from rates and fares, were not forthcoming, to meet all their expenses, under the level of freight tolls,which were set on the requirements of the C.P.R. The Canadian Northern was nationalised in 1918, and in 1923, the Canadian National Railway Company (C.N.R.) was incorporated, amalgamating the Canadian Northern, the Grand Trunk Pacific, and other eastern railways.[27]

Extension of the Rail Network into the Peace River Region

While the frontier of settlement in Alberta was being pushed north into the Peace River region, the position in the southern prairies was of rapid extension of settlement and railway mileages, and reductions in rates on primary products and settlers effects, to and from the east. The developments in the western provinces, as a whole have been examined,in order to clarify the

---

[25] Ibid., p. 140

[26] Ibid., p. 65.

[27] Currie, op. cit., p. 6.

extent of railway development and rate policies,at the time it was decided to extend rail lines into the Peace River region. When in 1907, a charter was secured to build into the area, the expansion of the main lines into the west were well under construction, and disagreements, with regard to freight rates had been initially resolved.

The Edmonton, Dunvegan and British Columbia Railway Company (E.D. and B.C.), commenced construction from Edmonton, in a northwesterly direction, in 1912, intending to build to a point at, or near, Dunvegan.[28] The line ran to the south shore of the Lesser Slave Lake, and continued beyond the Lake, to cross the High Prairie section of the country. It then ran in a northerly course to McLennan and west to Spirit River, a distance of 358 miles from Edmonton (see Figure 6). This section was completed early in 1916, and lay approximately twenty five miles south from Dunvegan, its intended terminal. Instead of continuing in a northwest direction, a branch line was constructed, south from Rycroft, to Grande Prairie, completed also in 1916. This line was extended to Wembley, a distance of fifteen miles, in 1924, with a further branch to Hythe, in 1928.

Another company, the Central Canada Railway, was incorporated by provincial statute, in 1913, to construct a line from west of McLennan to Peace River town. Construction was commenced in 1914, and completed to Peace River town in 1916. This line was subsequently extended to Berwyn, in 1921, to Whitelaw, in 1924, and to Fairview in 1928.

The lines constructed initially, were operated by private interests, but in 1920, as a result of financial difficulties, occasioned by the 1914-1918 war,

---

[28] Pers. comm., G.Walker, Traffic Manager, Northern Alberta Railway Company, Edmonton, July, 1965.

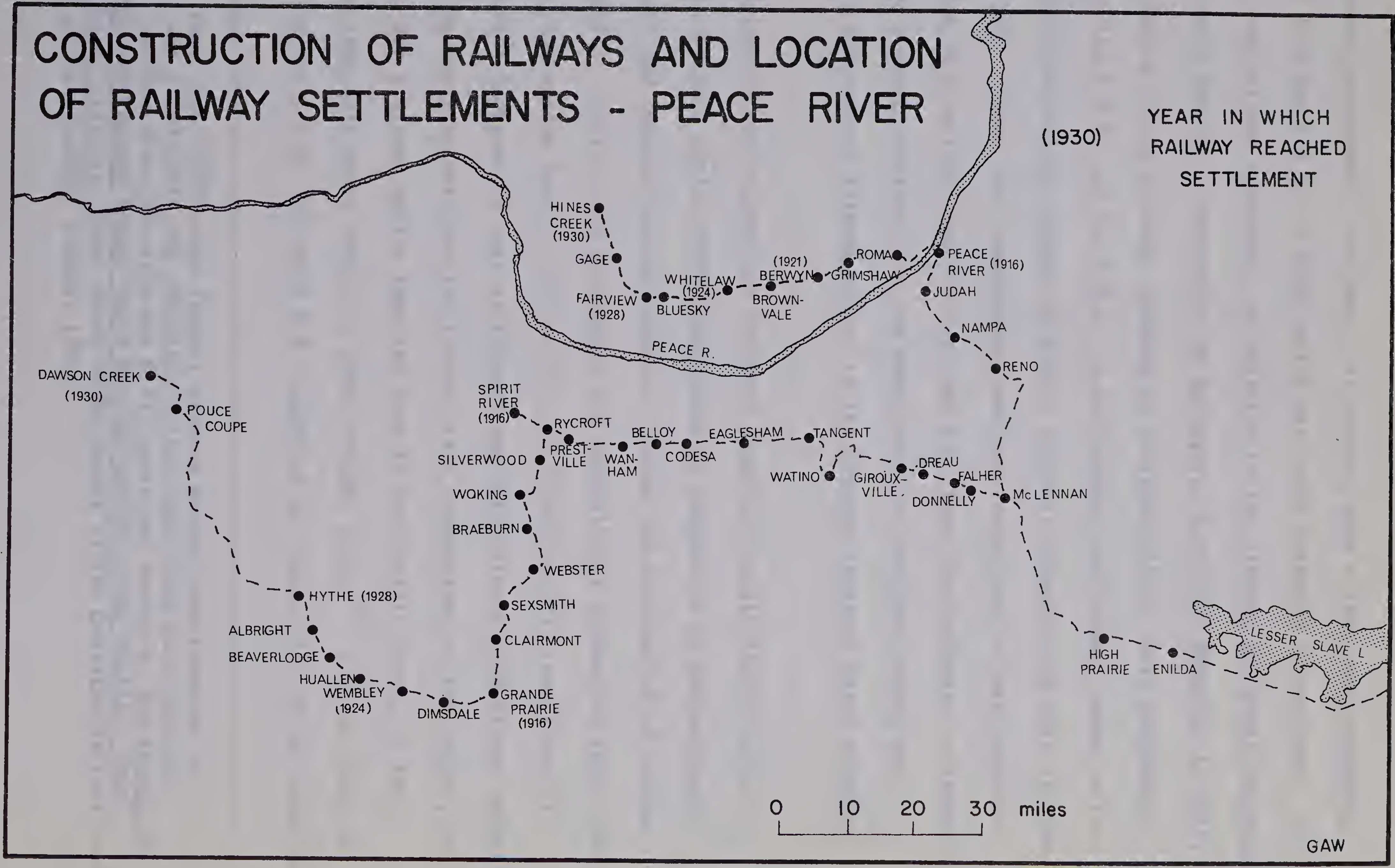

CONSTRUCTION OF RAILWAYS AND LOCATION OF RAILWAY SETTLEMENTS - PEACE RIVER
(1930) YEAR IN WHICH RAILWAY REACHED SETTLEMENT
HINES CREEK (1930)
GAGE
FAIRVIEW (1928)
BLUESKY
WHITELAW (1924)
BROWN-VALE
(1921) BERWYN
GRIMSHAW
ROMA
PEACE RIVER (1916)
JUDAH
NAMPA
RENO
PEACE R.
DAWSON CREEK (1930)
POUCE COUPE
SPIRIT RIVER (1916)
RYCROFT
PREST-VILLE
SILVERWOOD
WAN-HAM
BELLOY
CODESA
EAGLESHAM
TANGENT
WATINO
GIROUX-VILLE
DREAU
FALHER
DONNELLY
McLENNAN
WOKING
BRAEBURN
WEBSTER
SEXSMITH
CLAIRMONT
GRANDE PRAIRIE (1916)
HYTHE (1928)
ALBRIGHT
BEAVERLODGE
HUALLEN
WEMBLEY (1924)
DIMSDALE
HIGH PRAIRIE
ENILDA
LESSER SLAVE L.
0 10 20 30 miles
GAW

Figure 6

the provincial government took over. It entered into a five year operating agreement with the C.P.R. in 1920, which was later extended by one year. In 1929, the two railway companies, in addition to the Alberta and Great Waterways Railway, which had been constructed to Waterways, near Fort McMurray in 1925, and the Pembina Valley Railway, running to Barrhead (1927), were purchased jointly by the C.P.R. and the C.N.R. A new company was formed, known as the Northern Alberta Railway Company (N.A.R.), and this company took over all the lines in 1929. Plans were immediately made for extensions on both branches of the line, and in 1930, the old E.D. and B.C. line, was extended to Dawson Creek, the present terminal. In the same year, the northern branch was extended a distance of fifteen miles, to its present terminal point at Hines Creek.

The entry of the railway was the most important single factor in the development of this region, because, previous to completion of the railway, few products had reached outside markets. During the main period of railway building (1921 - 1931), both population and agricultural production rose, the population increasing from 21,108 in 1921, to 50,603 in 1931 (see Table II).

With this increase in both settlement and agricultural production, requests were made by outlying settlers for further rail connections in the region, and especially for a direct outlet from the area to the Pacific coast, on the assumption that this would result in lower freight rates.[29] A joint board of engineers of the C.P.R. and the C.N.R. undertook an examination of the question,

---

[29] At this time (1929), the freight rate on grain, from Edmonton to Vancouver, was 0.583 cents per ton/mile, whilst from Peace River town to Vancouver, via Edmonton, the rate was 0.717 cents per ton/mile. See Report on various proposed Railway Routes for a Western Outlet to the Pacific, from the Peace River District, Joint Board of Engineers of the Canadian National and Canadian Pacific Railways, Ottawa, 1929.

and made a report in 1929. This board concluded that, "No western outlet is justified for the present, as the existing railway (N.A.R.) furnishes the most economical route."[30] They even estimated that at the level of agricultural production in the area at the time, an average of one and one third trains per month, would be needed on a Pacific outlet.[31] Nevertheless, the board reported the results of their study of routes. The one which they regarded most feasible, involved joining the Central Canadian Railway, to the C.N.R. at Obed, west of Edson, and using the C.N.R. lines to Vancouver and Prince Rupert. The cost was estimated at eighty million dollars.[32]

It is interesting to note at this point, that in 1912, a private company was chartered by provincial statute in British Columbia, to build a railway from North Vancouver, to the Peace River region. This project was to be carried out in order to develop northern British Columbia, and effect a junction with the Grand Trunk Pacific at Prince George.[33] The line was constructed as far as seventy eight miles south of Prince George, by 1921, but the whole project did not materialize. The Grand Trunk Pacific, was taken over by the Government of Canada, which already owned the Canadian Northern, and the latter's line to Vancouver was used by the amalgamated companies. In 1918, this railway (Pacific Great Eastern), was taken over by the government of British Columbia, and it was not until 1958, that the line was connected with the N.A.R. at Dawson Creek.

---

[30] Ibid., p.3.

[31] Ibid., p.10, Note: The estimate given by the Board, of grain shipments from Peace River in 1919 to 1923, does not coincide with the figures quoted in The Sessional Papers of the Dominion of Canada (1920), This does not alter the fact that shipments did not justify a Pacific outlet at that time.

[32] Ibid., p.3.

[33] Glazebrook, op. cit., pp. 188-89

Expansion of Settlement and Commodity Movements to 1930

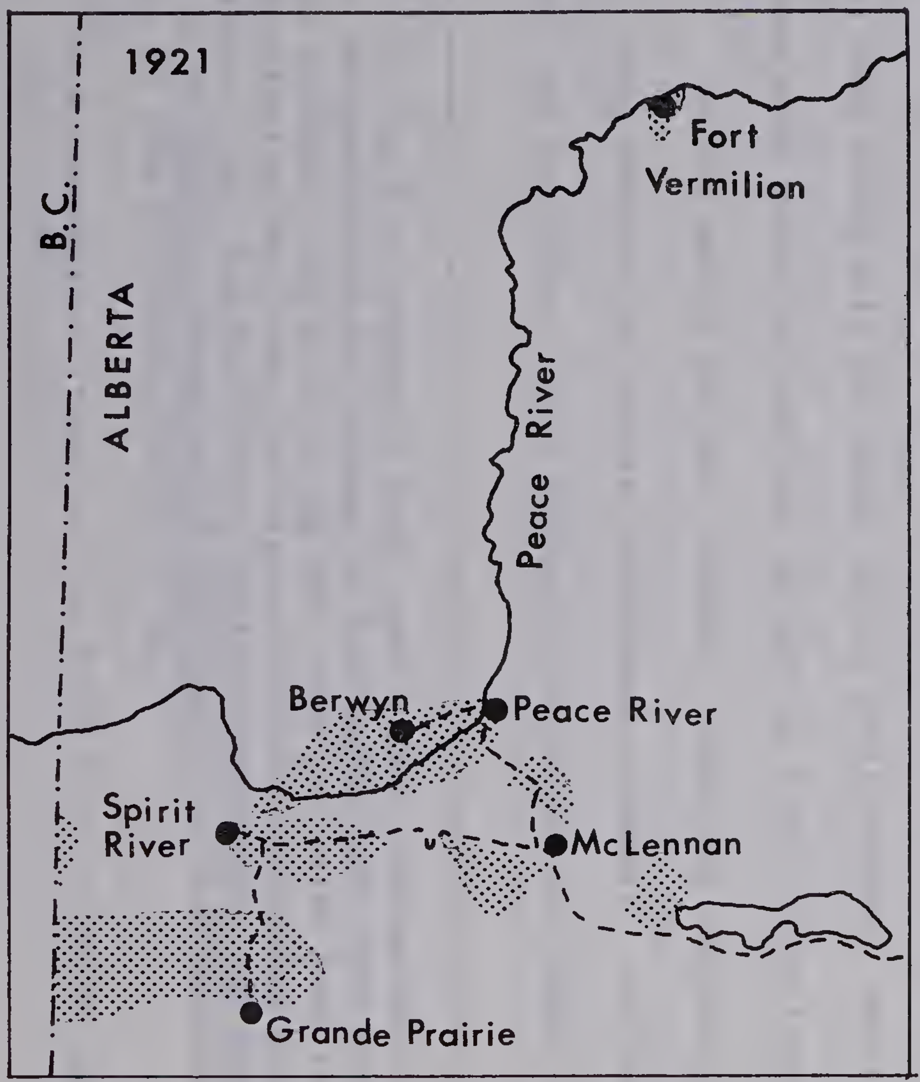
The two lines of penetration by the N.A.R., into the region, made possible greater contact between the formerly isolated settlements. In addition, practically all the social and commercial contacts were more tightly linked with Edmonton, as there were no highway or rail connections with southern British Columbia at this stage.

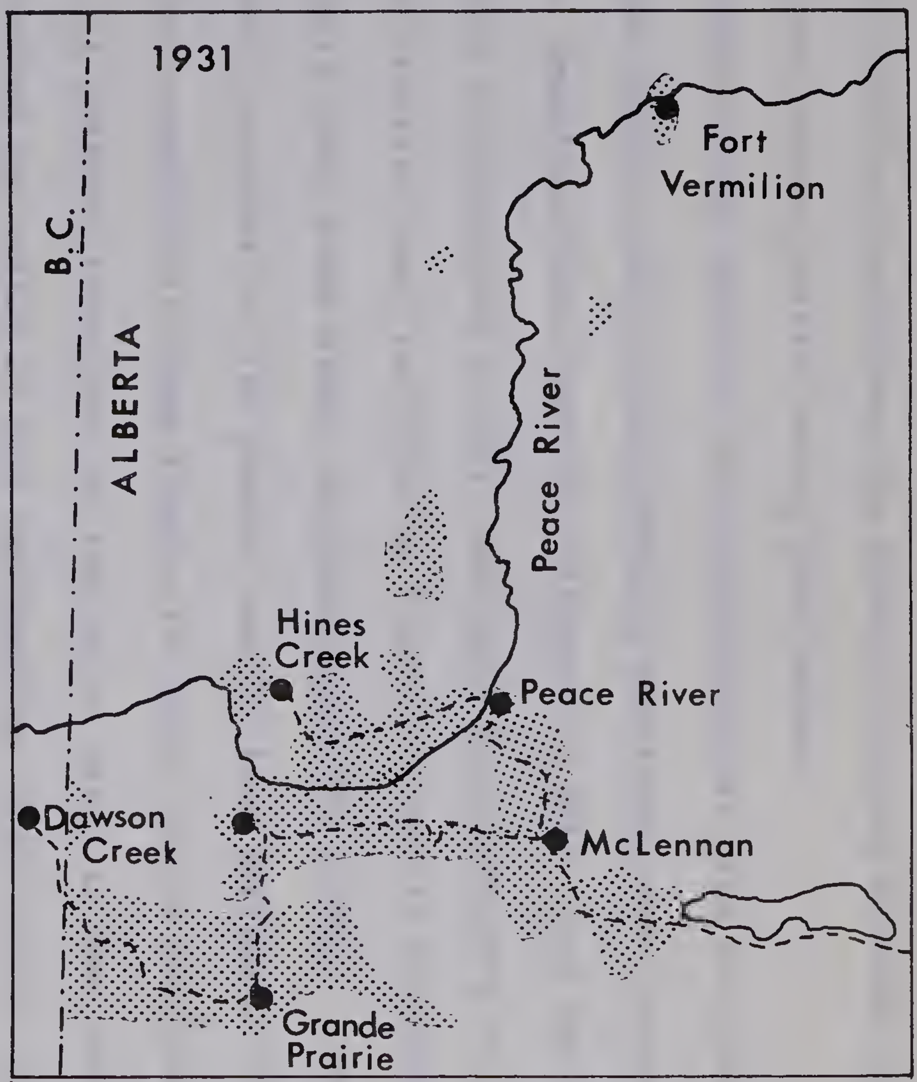
The original farming settlements in the Peace River region, took place around the west end of Lesser Slave Lake, and later moved west in scattered patches, north and south of the river, isolated from each other by broken country and wide stretches of unsettled territory. With the coming of the railways, however, these areas became more integrated, as the homesteaders occupied the intervening land on either side of the rail lines.

Figures 7 and 8 illustrate, how the areas of settlement have changed between 1921 and 1931, and how closely allied these areas were, with the railway network. In 1921, the rail lines stretched as far as Berwyn, on the northern line, and Spirit River and Grande Prairie, on the southern extension. Large areas still remained to be settled, especially between High Prairie and McLennan, Peace River town and McLennan, and Spirit River and Grande Prairie. It is noticeable on this map, that settlement was very thin east of Grande Prairie, where no rail lines had been constructed. By 1931 (see Figure 8), many of these gaps had been filled, particularly in the area between Grouard and Peace River town. Unfortunately, these maps only take into account the Alberta section of the region, as no detailed statistical data is available for British Columbia.[34] However, the general trend, would make it appear

---

[34] In 1883, the government of Canada was granted a block of 3,500,000 acres in the vicinity of the Peace River, and it was not until 1930, that this land was returned to provincial control (B.C.). See Province of B.C., Lands Service, The Peace River Bulletin Area, No. 10, 1963, p. 9.





RAIL NETWORK AND AREAS OF SETTLEMENT IN THE PEACE RIVER REGION
1921 AND 1931

- - - - - Railway

▨ Settled Area

0 50 miles

Source - D.B.S. Census of Canada, 1921 and 1931

GAW

Figure 7

Figure 8

likely that the area between the Alberta, British Columbia boundary and Dawson Creek was heavily settled during this period.

Between 1921 and 1931, the population rose from over twenty, to over fifty thousand people, and the main areas of settlement were outside the towns. Out of the three towns which were in existence in 1921, only two of them showed any increase in population by 1931, and these increases were not substantial. Grande Prairie, rose from 1,061 to 1,404, and Spirit River,from 210 to 232. The third town, Peace River, decreased from 980 to 864. Settlement in towns was only incidental to the general wave of land settlement in this period, and the comparatively large figures for 1921, can be attributed to the fact that all the three towns were at the end of steel in that year.

During the period of rail construction, from 1916 to 1930, the process of expansion was by no means even, as there were various forces which retarded settlement, in certain periods. During the war years, 1914 to 1918, high prices were being paid for wheat in the world markets, and this product could be grown with profit by settlers as much as sixty miles from the nearest railhead.[35] At the end of the war, however, there was increased migration to the area, being assisted by soldier settlement schemes,[36] continued high wheat prices, and publicity. This migration increased the number of farms, from

---

[35] It has been suggested that under normal circumstances on the prairies, it is not profitable for farmers to haul grain more than ten to fifteen miles to the railhead, and areas lying more than ten miles from the railway, have low population densities, and are not characteristically grain shipping districts. See W.A.Mackintosh, Prairie Settlement, the Geographical Setting, Vol. I, of Canadian Frontiers of Settlement, ed. W.A.Mackintosh and W.L.G. Joerg, (9 Vols.), Toronto, 1934, p. 55.

[36] B.G.Vanderhill, Trends in the Peace River Country, Canadian Geographer, Vol. 7, No. 1, 1963, p. 37.

1,307 in 1916, to 3,578 in 1921, with the occupied acreage rising in approximately the same proportion (see Table II).

TABLE II - AGRICULTURAL EXPANSION - CENSUS DIVISION 16, ALBERTA, 1916 - 1931

	Number of Farms	Occupied Acreage	Mean Size of Farm (acres)	Improved Acreage Total	Wheat	Oats
1916	1,307	330,543	253	69,363	19,777	24,042
1921	3,578	879,945	246	243,570	58,548	84,690
1926	2,796	857,154	307	308,232	128,735	73,001
1931	6,974	1,804,418	259	674,179	305,922	150,206

Sources: Canada, D.B.S., Census of Manitoba, Saskatchewan and Alberta, 1916, Ottawa.
Canada, D.B.S., Census of Canada, 1921 and 1931, Ottawa.
Canada, D.B.S., Census of Alberta, 1926, Ottawa.

After the post war expansion, there was a period of recession, from 1921 to 1925. This set back, was caused by high freight rates, falling wheat prices, and a drop in cattle prices.[37] In addition, the transportation outlook was discouraging, as the railways were not proceeding at the same rate of expansion as had been promised, and the roads were in a poor state of repair.

While these setbacks resulted in a considerable decrease in the number of farmers, there was only a slight falling off in the total amount of occupied land. This resulted in the settlers, who remained, taking over additional land. The size of farms increased from an average of 246 acres in 1921, to 307 acres in 1926. In addition, there was an increase of 64,662 acres, in the amount of improved land, and a substantial increase in the wheat acreage.

---

[37] Mackintosh, op. cit., p. 42.

These increases are further indicated in Table III, which illustrates the commodity movements by rail, in the period 1920 to 1931.

TABLE III - COMMODITY SHIPMENTS BY RAIL - PEACE RIVER REGION, 1920 - 1931

Year			Tons of Freight Hauled		
	Wheat	Oats	Horses	Cattle	Hogs
1920	14,342	33,227	1,299	5,074	1,629
1921	23,472	18,850	767	2,786	1,077
1922	43,734	21,599	415	7,572	2,783
1923	50,618	7,689	207	7,935	2,291
1924	60,229	29,645	316	8,772	2,889
1925	72,769	18,362	474	9,223	3,454
1926	105,744	14,829	541	5,092	2,375
1927	177,625	33,089	980	4,755	2,544
1928	213,344	42,387	1,713	5,135	2,596
1929	211,773	42,382	1,644	3,668	2,509
1930	273,213	50,302	1,904	2,987	2,160
1931	334,659	70,451	765	3,485	2,575

Note: The figures include both incoming and outgoing freight.

Source: C.A.Dawson, *The Settlement of the Peace River Country*, Vol. VI,of *Canadian Frontiers of Settlement*, ed. W.A.Mackintosh and W.L.G. Joerg, (9 Vols.), Toronto, 1934, pp. 57 - 59.

Between 1926 and 1931, wheat shipments rose from 105,744 tons, to 334,659 tons. On the other hand, oats, shipments of which had been considerably higher

than those of wheat in 1920, declined until 1927, when they once again increased slightly. The annual shipments of livestock are also indicated in the above table, and include both incoming and outgoing movements. The shipments of horses, which declined up to 1926, are directly related to population movements into the region, as it was chiefly the importation of these animals by the settlers which accounted for these shipments. This is not the case with cattle movements, however, as from 1920 onwards, an increasing number of cattle began to move out of the area, until 1925, when shipments fell off very perceptibly.

One of the most important factors in the consideration of changes in commodity shipments, is that of freight rates. Many factors, such as competition from other forms of transport, and railway policies, have a bearing on the changes which are made on these rates, from year to year. Without attempting to analyse the complicated rate structures in detail, one important aspect has to be considered, which directly affected the quantities of freight which were shipped out of the Peace River region during this period.

The Crows Nest Pass rates, which were in effect on the trans-continental lines, took into consideration the physical features of the areas through which the rail lines passed. In mountainous terrain, the higher costs of operation and maintainance justified higher tolls than on the prairie sections. In the early years of operation of the lines into the Peace River region, the rates had always been on the Mountain Scale, despite the fact that the area traversed by the lines, resembled the prairies rather than the mountains. In 1924, the shippers applied for the elimination of these high rates, and a reversion to the Crows Nest Pass level on export grain. It was estimated that rates on grain,

as they stood at the moment, were higher than the traffic could bear.[38] The commission, which considered the case, turned down the request, on the grounds that the lower rates, brought into effect more than twenty years before, were made under conditions which were entirely different from those existing in 1924.[39]

In 1925, however, the C.P.R., as lessor of the railway, brought into force the lower scale of rates on the Grande Prairie branch. In addition, in 1929 the newly created N.A.R. published these lower rates on all their lines into the Peace River region. Therefore, before 1925, rates on grain were so high ✓ that they did not provide any impetus to the growers for the export of their grain. After that date, however, partly as a result of the lower rates, shipments of grain increased considerably (see Table III).

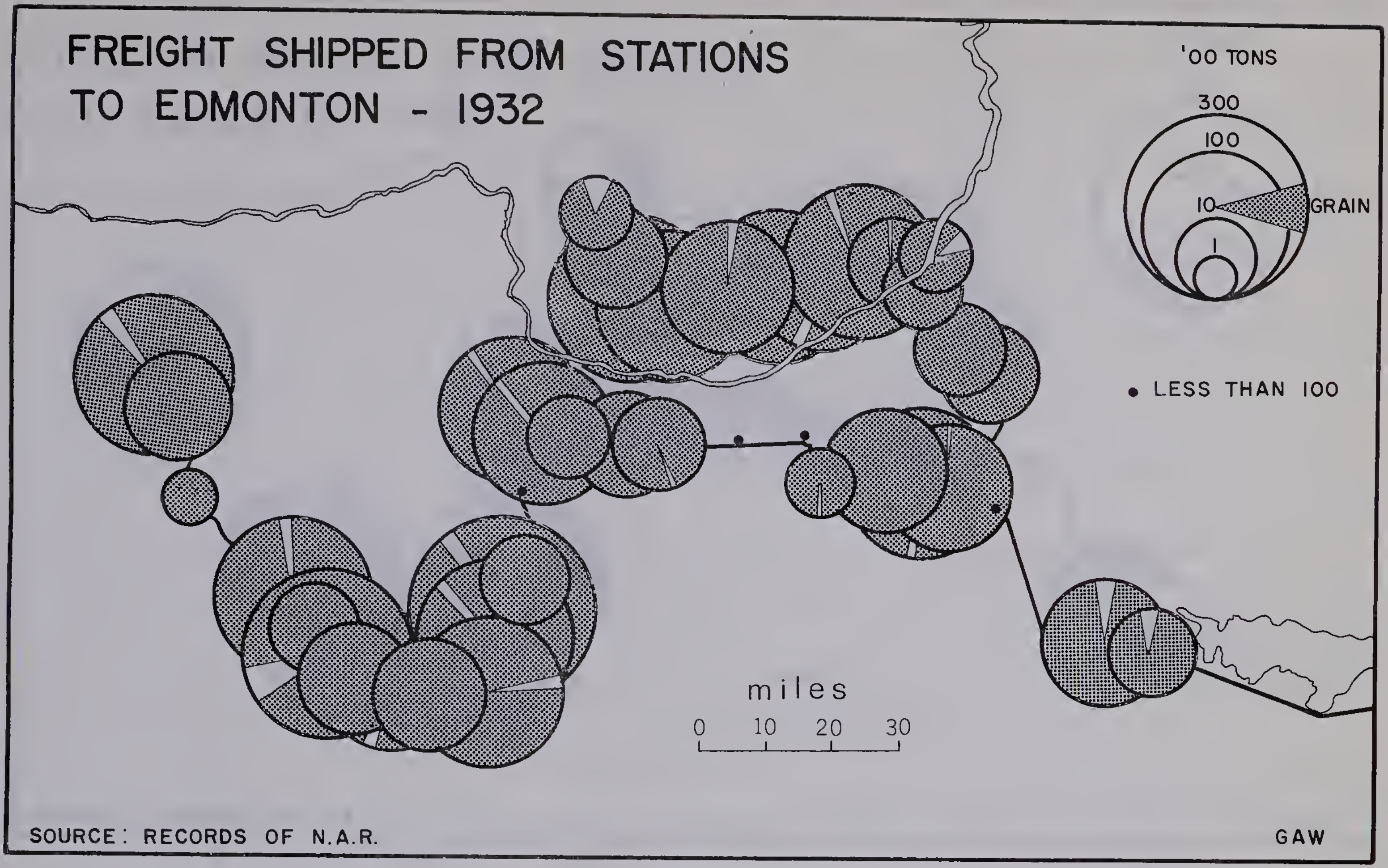
RAIL COMMODITY SHIPMENTS, 1930 - 1948

In order to analyse the growth and decline of commodity shipments by rail in the period 1930 to 1948, several maps have been constructed, showing the freight shipped from the Peace River stations to Edmonton, in the years 1932, 1936, 1941, and 1946 (see Figures 9 to 12). In addition, the changes in both the total shipments and shipments of individual commodities have been plotted in Figures 13 to 16. Together, these maps record the changes which have taken place, from the situation which existed, when the N.A.R. was completed to its present limits in 1930, through the period of the war years, 1939 to 1945, and ending at approximately the time when truck transportation began to assume an

---

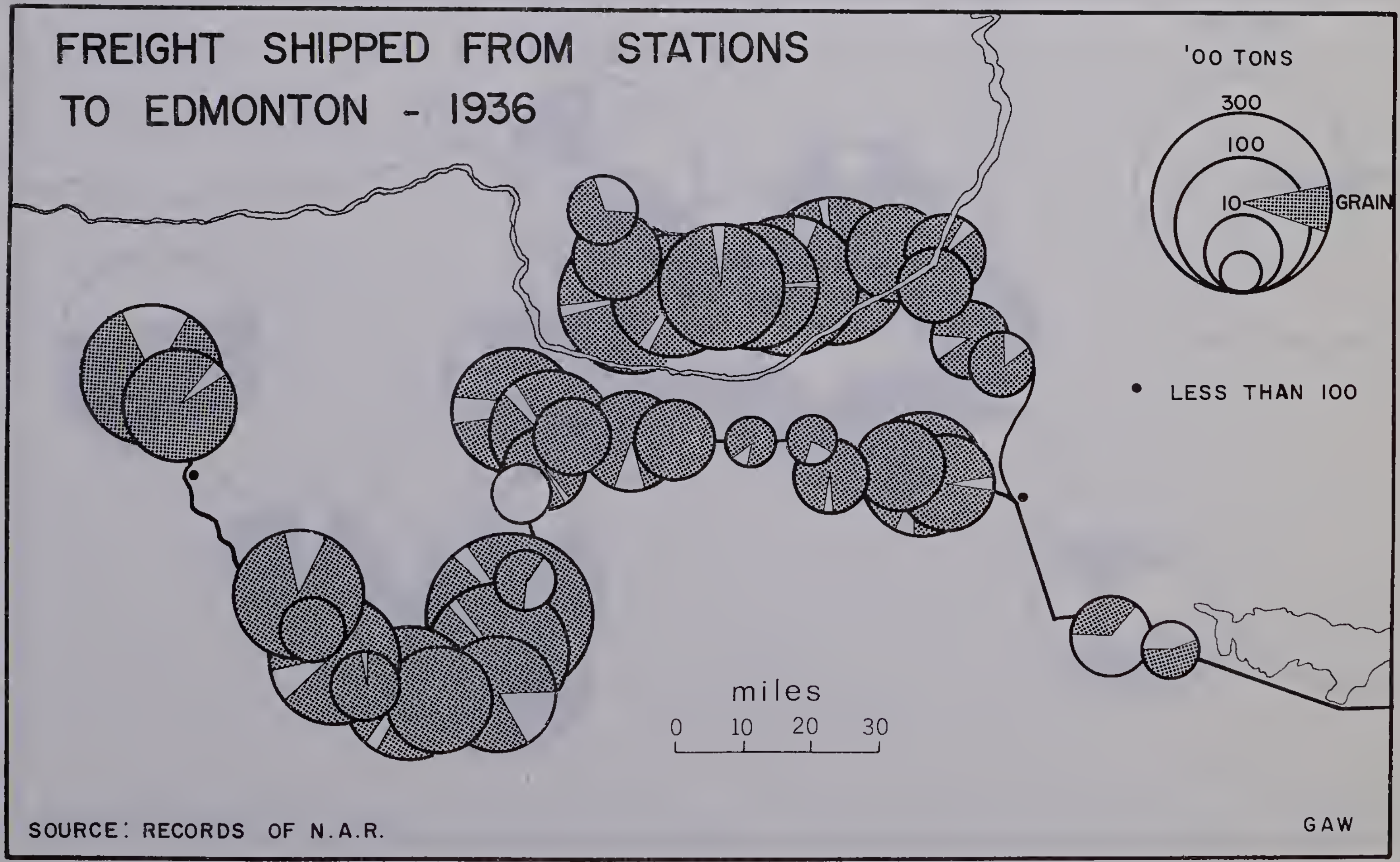
[38] In 1924, the rate on grain from Edmonton to Fort William (1,268 miles), was 26 cents per hundred pounds. From Grande Prairie to the same destination (1,680 miles), it was 42 cents. From Edmonton to Vancouver (836 miles), the export rate was 22½ cents, and from Grande Prairie to Vancouver (1,248 miles), 43 cents. See Currie, op. cit., p. 251.

[39] Loc. cit.


FREIGHT SHIPPED FROM STATIONS TO EDMONTON - 1932

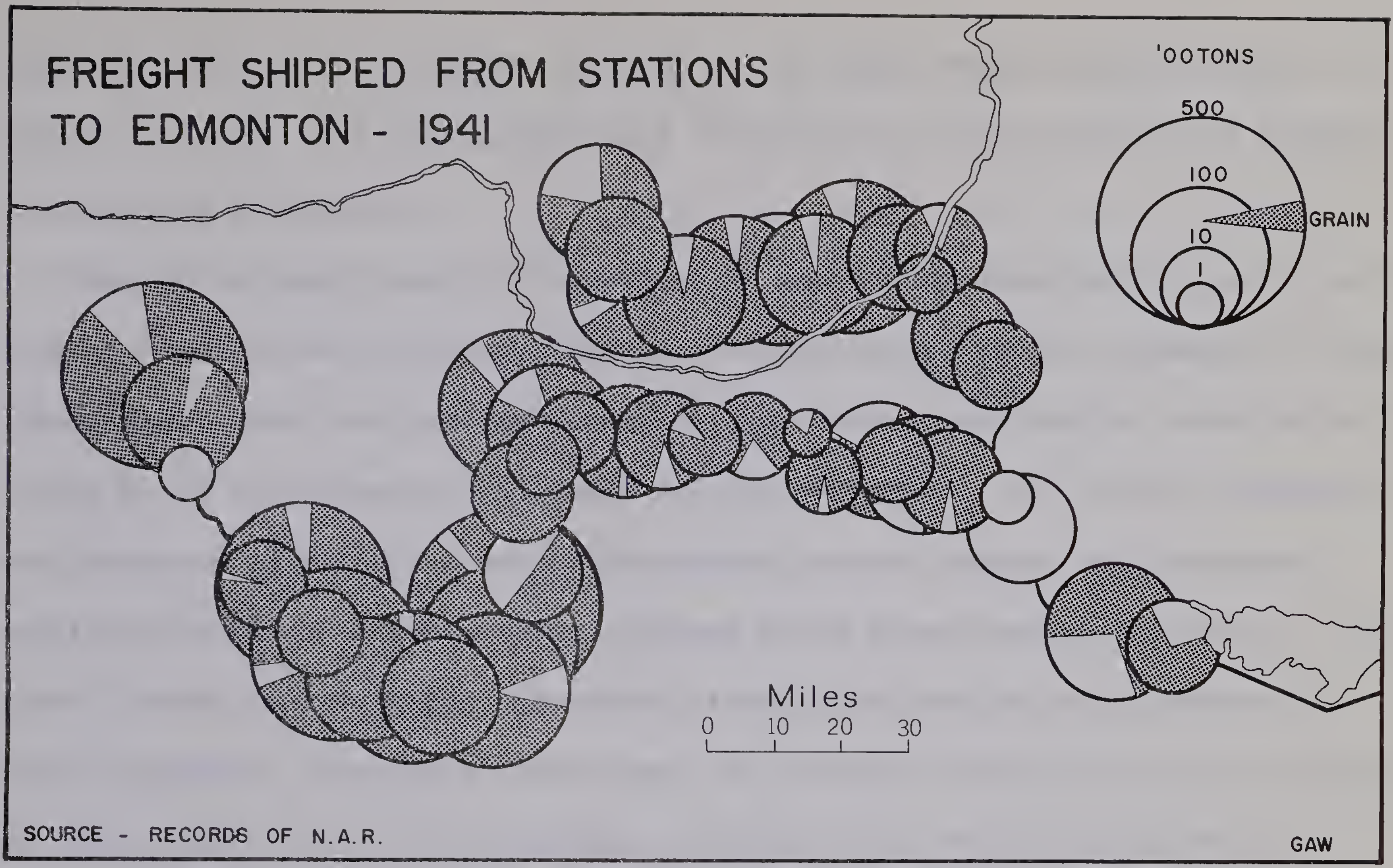
SOURCE: RECORDS OF N.A.R.

Figure 9


FREIGHT SHIPPED FROM STATIONS TO EDMONTON - 1936

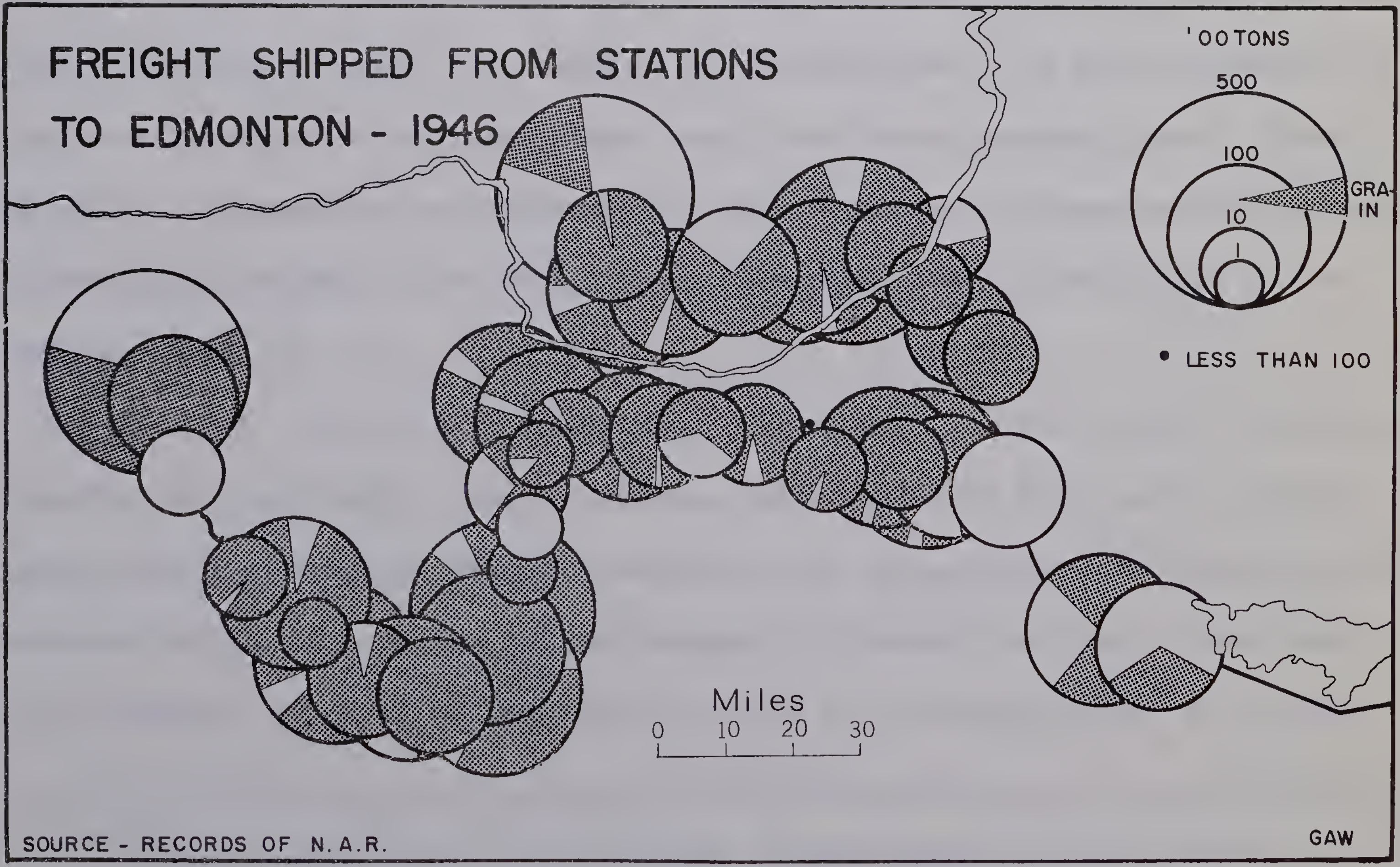
SOURCE: RECORDS OF N.A.R.

Figure 10



SOURCE - RECORDS OF N.A.R.

Figure 11



SOURCE - RECORDS OF N.A.R.

Figure 12

important role in the movement of freight. In other words, this was a non-competitive era, when the railway held the monopoly on the movement of freight into and out of the area.

During the early years of operation of the N.A.R., the traffic consisted of grain, lumber and livestock, and as the pattern of freight shipments in 1932 illustrates, there was a great dependence upon the grain traffic, this product taking up 98.1 per cent of the total freight shipments. The largest shipments from stations in the area, was in the Grande Prairie region, with somewhat smaller ones on the northern line, between Peace River town and Fairview. Two other centers, Spirit River and Dawson Creek, stand out as having moderately large shipments. These two centers were at the end of the rail lines, and acted as collecting centers for the produce of settlers in the adjoining areas.

The large shipments of grain in 1932 from this area, were the result, not of an excellent crop year, as might be expected, but of the export of seed to help the farmers in the southern part of the province. In 1931, there had been severe droughts in south east Alberta and Saskatchewan, and large shipments of seed were moved from the Peace River area, into these southern parts. These shipments can therefore be attributed to this point, as 1932 was marked by periods of prolonged drought in the Peace River, markedly reducing the yields, from previous years.[40]

Figure 10, for the 1936 shipments, shows a much smaller amount of freight from the area as a whole, due to the poor crop yields of that year. The same areas stand out as large shipping centers, with the addition of Sexsmith, which, considering its size, shipped large amounts of freight that year. Once again, this community acted as a distribution center for outlying areas, as in these

---

[40] Alberta, Department of Agriculture, Annual Report, 1932, Edmonton, p.21.

early years, grain was hauled to the railheads from as much as sixty miles away. The most obvious dissimilarity between shipments in 1936, and those of 1932, is in the amount of grain shipped, in proportion to the total freight. This percentage had declined, as in 1932, only one center (Hines Creek), had grain shipments amounting to less than ninety per cent of total freight, whereas in 1936 this percentage had decreased, especially in the area around the west end of the Lesser Slave Lake, where shipments of livestock exceeded those of grain.

Largely as a result of this overall decline in commodity shipments, the net rail revenue of the N.A.R. dropped from $163,573 in 1931, to $75,866 in 1936.[41] This revenue which had stood at $326,796 in 1929, had dropped to $72,487 in 1930, with the effects of the depression, but had picked up again the following year. It continued at a steady level up to 1942, reaching its highest level in the years 1942 to 1944. This rise was due to the enormous amount of freight hauled into the region, for construction on the Alaska Highway project, and at its peak, the traffic required the scheduling of four trains daily to Dawson Creek.[42]

Unfortunately, incoming freight figures for the railway, are not available for these earlier years, but Table IV illustrates that the increases in rail revenue for the years 1942 to 1944, could not have been the result of the outgoing grain shipments, as in one year, 1943, these shipments declined considerably.

Figures 11 and 12, illustrate the continuing decline of wheat shipments, in comparison to those of livestock and lumber. From 1938 onwards, livestock had been taking an increasingly larger share in the total shipments, rising

---

[41] All figures of N.A.R finances, obtained from G.Walker, Traffic Manager, N.A.R., Edmonton, July and August, 1965.

[42] N.A.R., Unpublished information sheet, N.A.R., Edmonton, October, 1963.

TABLE IV - COMPARISON OF RAIL REVENUE AND OUTGOING GRAIN SHIPMENTS FROM PEACE RIVER STATIONS TO EDMONTON, 1940 - 1945

Year	Net Rail Revenue (dollars)	Grain Shipments (tons)	Livestock Shipments (tons)
1940	501,408	287,680	11,043
1941	582,034	296,480	15,023
1942	2,682,811	324,040	24,373
1943	3,744,356	126,640	30,897
1944	1,211,969	282,400	31,761
1945	627,899	235,760	20,925

Sources: Shipments - Appendix 'A'
Revenue - Pers. comm., G.Walker, Traffic Manager, N.A.R., Edmonton, July, 1965.

from 5.9 per cent in that year, to the peak in 1943, when they accounted for 18.6 per cent of the total. Lumber had also been increasing from 1941 onwards, rising from 3.4 per cent, to 19.3 per cent in 1946, and continuing to rise after that date, with the addition of shipments of pulpwood. Although the potential of the forests was not being fully utilized in the area, probably due to the distance from markets and the poor state of the roads, there is no doubt from the figures available that shipments were increasing and taking up a larger proportion of the total freight being shipped out of the region.

In addition to these comments on commodities, Figures 11 and 12, illustrate the growing dominance of certain centers over others. Dawson Creek, with a population of 518 in 1941, had risen to 3,518 in 1951, and was taking an increasingly dominant role in total shipments. Hines Creek, at the end of the

northern rail line, stands out as a dominant shipping center, but mainly for the increasing tonnages of lumber which it was handling. In addition, shipments from Grimshaw were rising (15,160 tons of grain in 1941, and 29,960 tons in 1946), as this center was acting as a shipping point to serve the increasing settlement to the north, as far as Notikewin.

It would be illustrative at this point, to take into account the agricultural statistics, for the years 1936 to 1946, as it would appear from Figures 9 to 12, that grain production was declining. Table V, shows that this is not the case, however, as although grain shipments were decreasing in proportion to the total, production was in fact increasing.

TABLE V - AGRICULTURAL PROGRESS IN PEACE RIVER REGION, 1936 - 1946

Year	Number of Farms	Occupied Acreage	Mean Size of Farm (acres)	Improved Acreage Total	Wheat	Oats
1936	8,671	2,359,863	272	942,314	321,495	234,686
1941	8,406	2,630,102	312	1,167,773	368,437	262,919
1946	7,134	2,528,902	354	1,270,354	421,293	301,902

Note: Statistics shown, taken from Census Division No. 16 in Alberta, plus Municipal Districts 734 to 738, 764 to 767, 794 to 796, 824 to 826, and 854 to 855 in Census Division 15. Figures for the British Columbia area of the Peace River, are only available for 1941, and have been omitted for that year, as they would have given a false picture.

Sources: Canada, D.B.S., Census of Alberta, 1936 and 1946, Ottawa.
Canada, D.B.S., Census of Canada, 1941, Ottawa.

In 1936, the number of farmers totalled 8,671, decreasing to 7,134 in 1946. These figures corresponded to an increase in occupied land from 1936 to

1941, but with a decrease in 1946. The size of farms increased from an average of 272 acres in 1936, to 354 acres in 1946, which indicates that many of these farms were abandoned, or taken over by larger concerns. It must be remembered, however, that this was the period of the war years, when many people left the area. This fact is born out by the population figures, which only increased by 13.5 per cent in the period 1931 to 1941. At the same time, however, the improved acreage increased by over 328,000, with wheat increasing by nearly 100,000 acres. Therefore, although there was a recession in the population figures, grain crop production was increasing.

Figures 13 and 14 record the changes in total shipments and in grain shipments, from 1932 to 1946. In Figure 14, growth had taken place, to the largest degree, in the three centers of Dawson Creek, Grimshaw and Hines Creek, all shipping points for comparatively large areas. In addition, the central area, between McLennan and Spirit River had also recorded increases in shipments. The most marked decline in both cases, was on the northern line, between Fairview and Grimshaw, and in the area to the south, around Grande Prairie. Figure 13 illustrates the fact that twelve towns handled less total tonnages in 1946, than in 1932, while Figure 14 shows that for wheat shipments, fifteen centers handled less in 1946.

The only accountable reason for the decline in these areas, is that there appeared to be a tendancy towards local concentration, with certain centers gaining at the expense of their neighbours. This was especially noticeable in the total shipments on the northern branch, where Grimshaw and Hines Creek had gains of 20,910 tons and 33,023 tons respectively, while the communities of Fairview, Bluesky, Whitelaw, Brownvale and Berwyn, had declining shipments.

In mapping the shipments of livestock and timber by rail (Figures 15 and 16), the basic pattern was the same, that is, growth in nearly all centers,

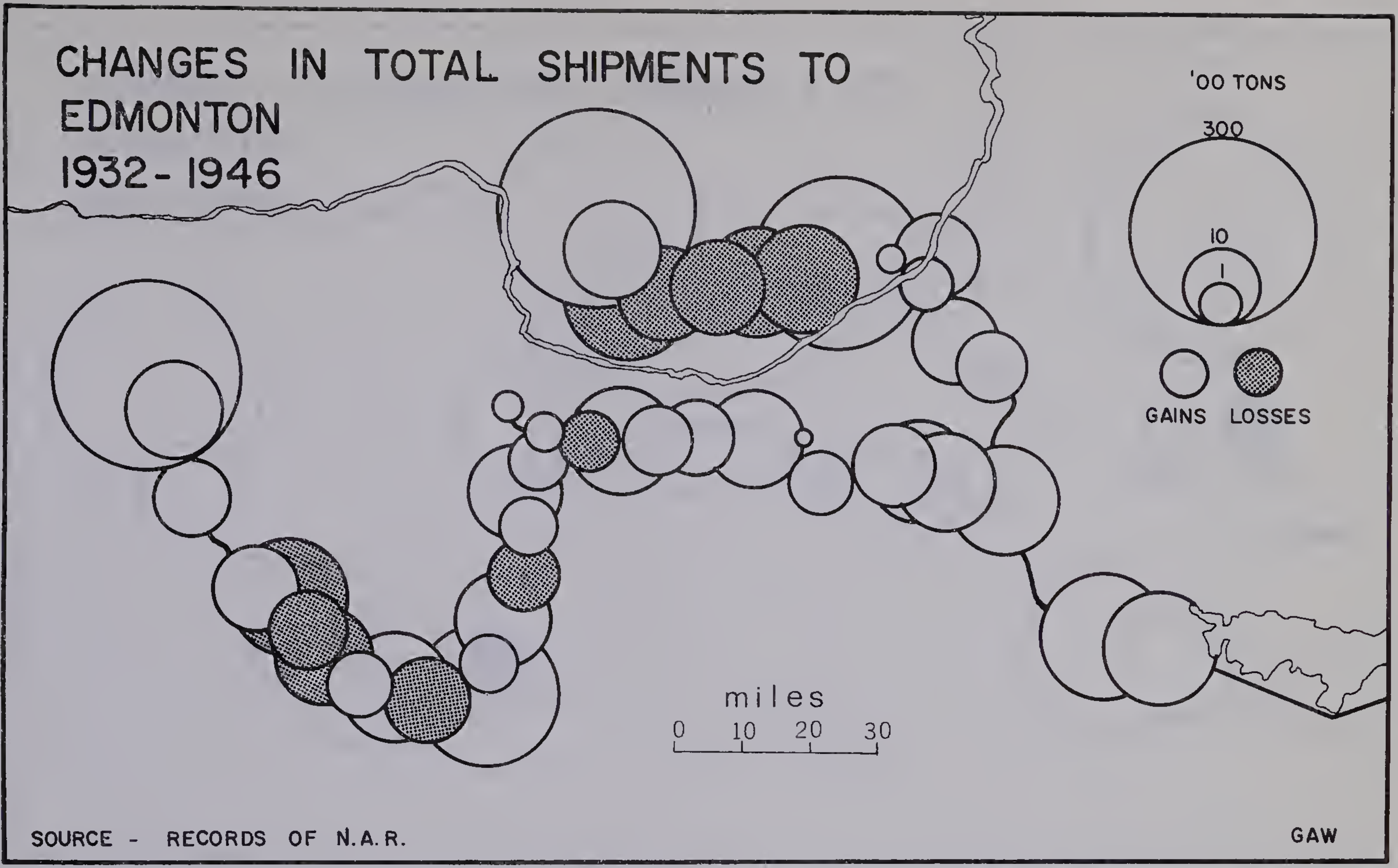

CHANGES IN TOTAL SHIPMENTS TO EDMONTON 1932-1946
'00 TONS
300
10
1
GAINS
LOSSES
miles
0
10
20
30
SOURCE - RECORDS OF N.A.R.
GAW

Figure 13

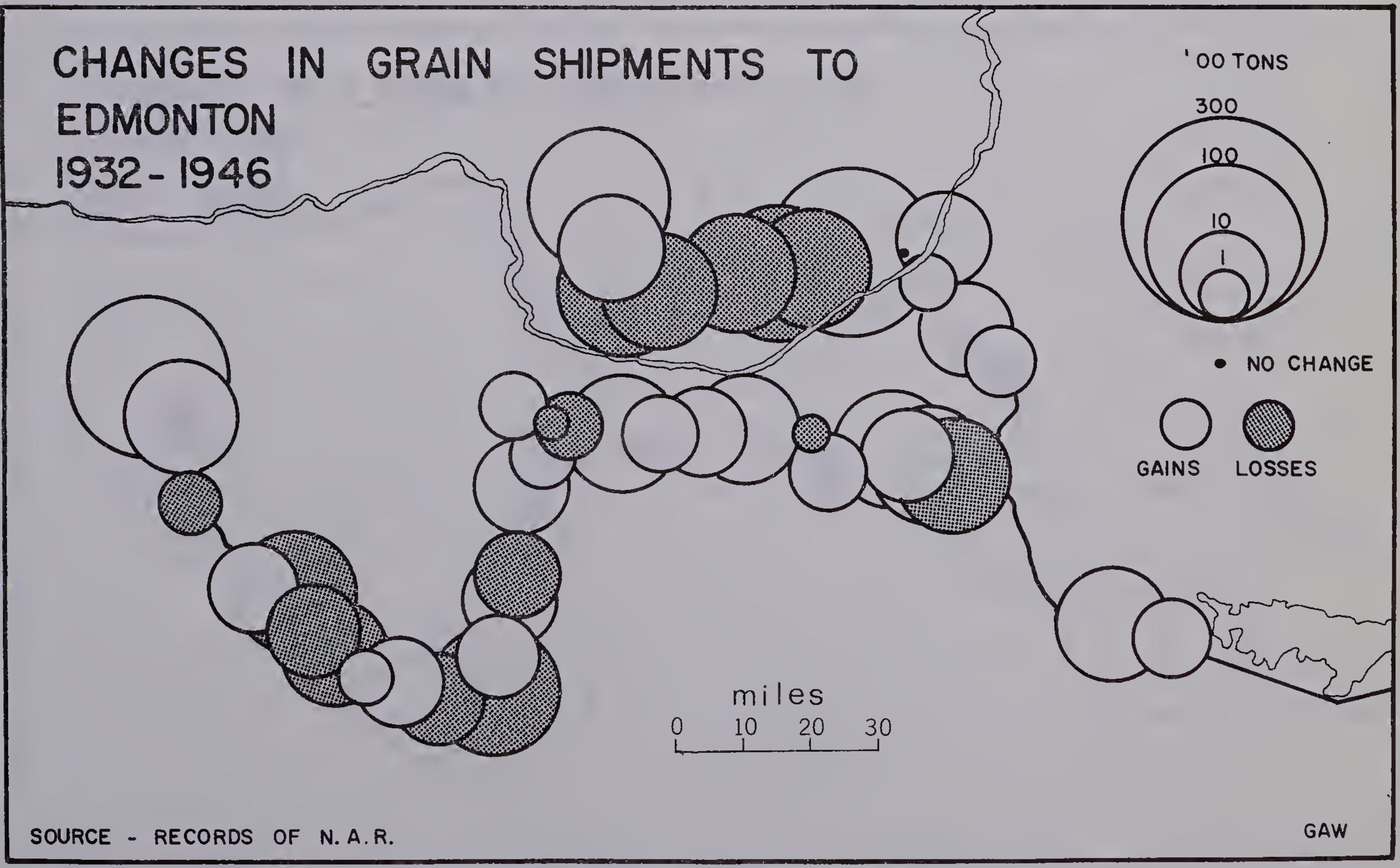

CHANGES IN GRAIN SHIPMENTS TO EDMONTON 1932-1946
'00 TONS
300
100
10
1
● NO CHANGE
GAINS
LOSSES
miles
0
10
20
30
SOURCE - RECORDS OF N.A.R.
GAW

Figure 14

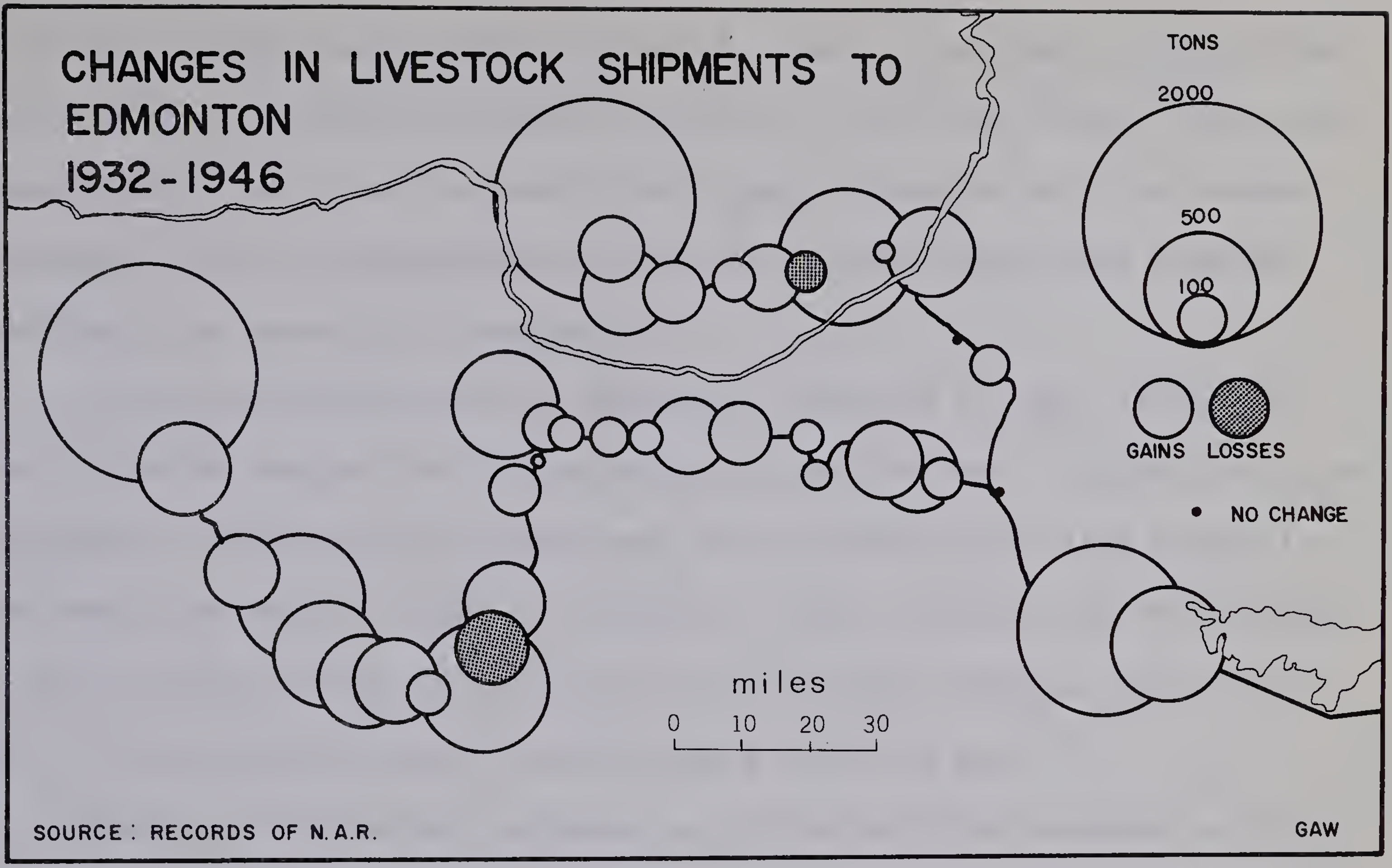

CHANGES IN LIVESTOCK SHIPMENTS TO EDMONTON 1932-1946
TONS
2000
500
100
GAINS
LOSSES
NO CHANGE
miles
0
10
20
30
SOURCE: RECORDS OF N.A.R.
GAW

Figure 15

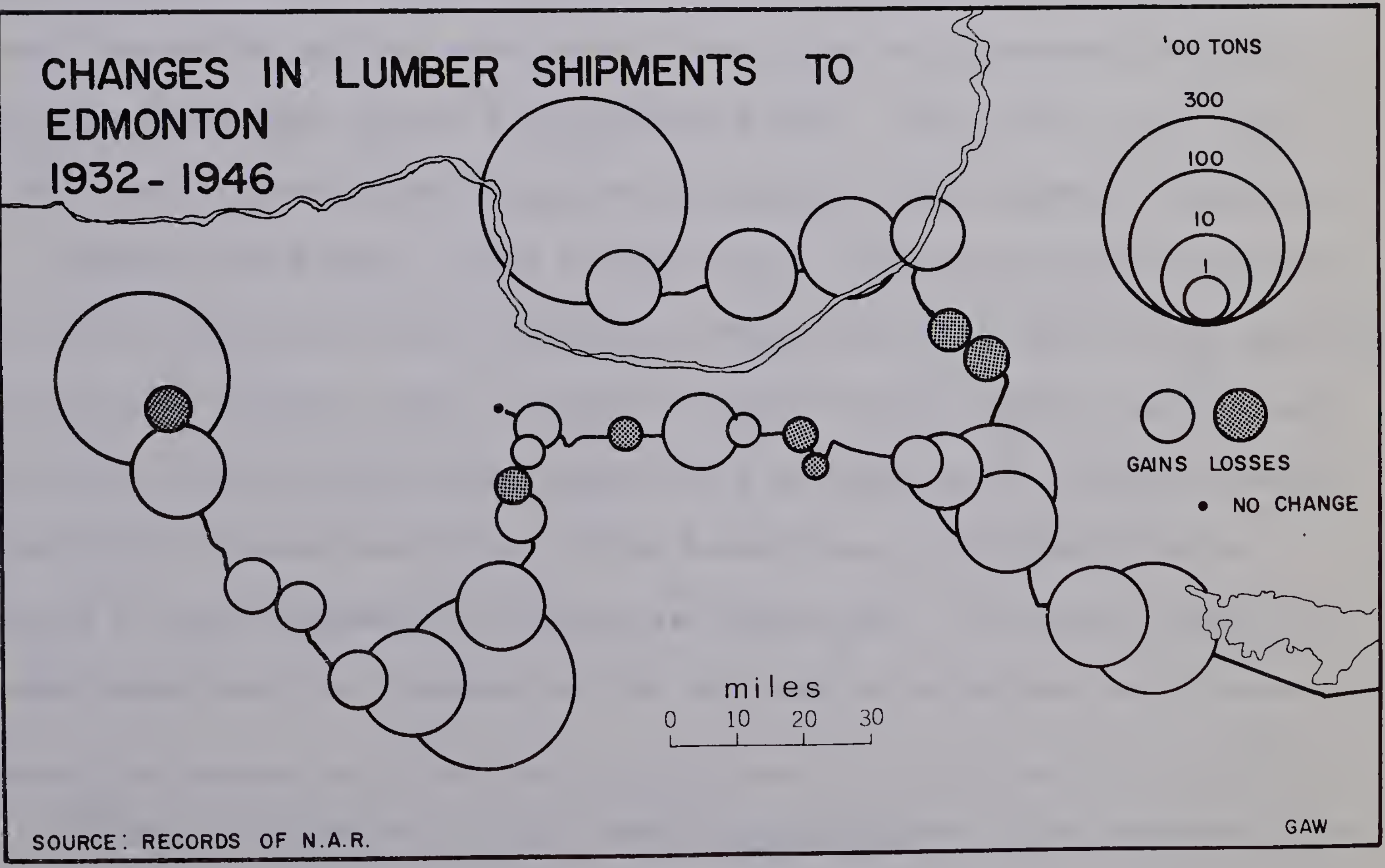

CHANGES IN LUMBER SHIPMENTS TO EDMONTON 1932-1946
'00 TONS
300
100
10
1
GAINS
LOSSES
NO CHANGE
miles
0
10
20
30
SOURCE: RECORDS OF N.A.R.
GAW

Figure 16

especially in the case of timber shipments. Some of the towns shipping timber, recorded large increases of between 15,000 and 20,000 tons (Grande Prairie and Hines Creek), and it was noticeable that those communities with the largest increases, were the ones which had comparatively good road access from the outlying areas where the timber was cut,

In the gross pattern of rail shipments, from 1932 to 1946, it is clear that grain has dominated all other shipments from the area, with the variations being due to differences in yields over the individual years (see Figure 17). The drop in shipments in 1939 in livestock, lumber and grain can be explained by the low cash returns on agricultural and livestock products, due to the war, as there is no evidence that 1939 was a poor crop year.[43]

Shipments of livestock increased up to 1944, with the exception of 1939. During the early years of agricultural development, the emphasis was more on field crops than on livestock, as the homesteaders had not sufficient capital to purchase many cattle. The expansion of cattle production, during the war years, was due to the increased prices being payed for livestock, when the British markets were cut off from Northern Europe. After 1944, as a result of the rise in grain prices, there was a decrease in the shipment of cattle.

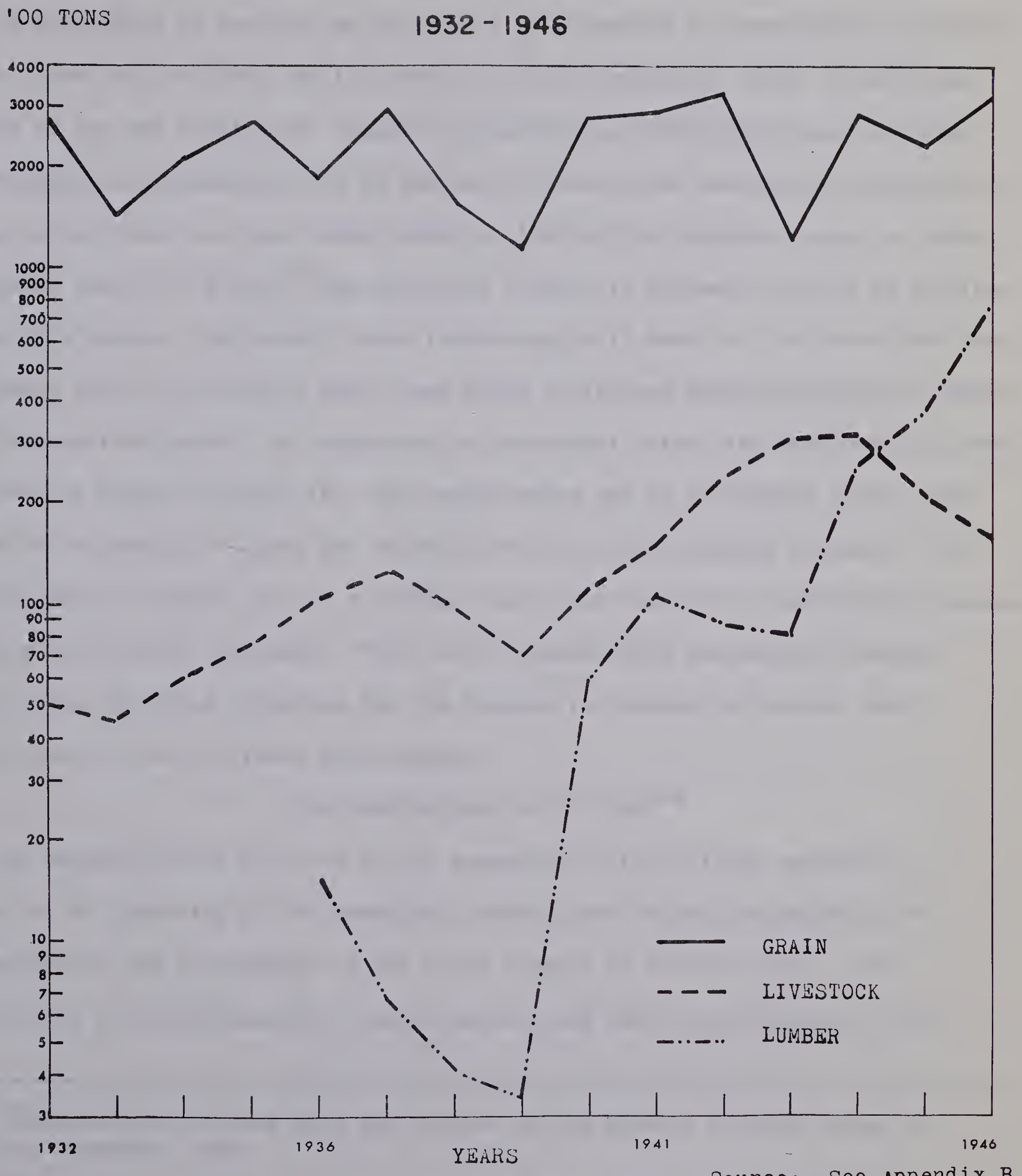
Shipments of timber, showed the most rapid increases during this period, and can be attributed to the improvements which were being made in the construction of local forestry roads, in order to reach the rail lines. Local roads which were becoming increasingly important from 1936 onwards, showed a marked concentration around Grande Prairie and Hines Creek, coinciding with the centers of large shipments of timber (see Figure 16). In the early years of lumber operations, the tendancy was for the work to be carried out in close

---

[43] Alberta, Department of Agriculture, Annual Report, 1939, Edmonton, 1940

TOTAL RAIL SHIPMENTS TO EDMONTON FROM PEACE RIVER

1932 - 1946



Source:- See Appendix B

Figure 17

proximity to the railway. With the depletion of existing stands close to the railway, and the development of local roads, there was a tendancy for lumbering operation to be carried out further away from the rail lines.

In attempting to analyse the variations in shipments of commodities from this region, from 1931 to 1948, the rate structure was examined in order to ascertain whether or not any significant changes had taken place which could have affected the shipments of commodities out of the area. However, no substantial alterations appear to have been put into effect prior to 1948 on the domestic rates, on either livestock, lumber or grain,[44] and therefore changes in shipments cannot be attributed to this factor. The export grain rates were still based on the Crows Nest Pass Agreement, and no alterations took place which could have affected changes in shipments during this period. A comparison of the export rates with the domestic rates on grain, is shown in Figure 18. The export rates are on a straight scale, with little or no changes in cents per ton/mile price, with increasing distance. The domestic rates, however, are on a sliding scale, and there is a considerable increase in price with greater mileages. This fact, together with the overall cheaper export rates, provided incentive for the farmers to produce and export their grain products from the Peace River region.

THE ROAD NETWORK UP TO 1948[44a]

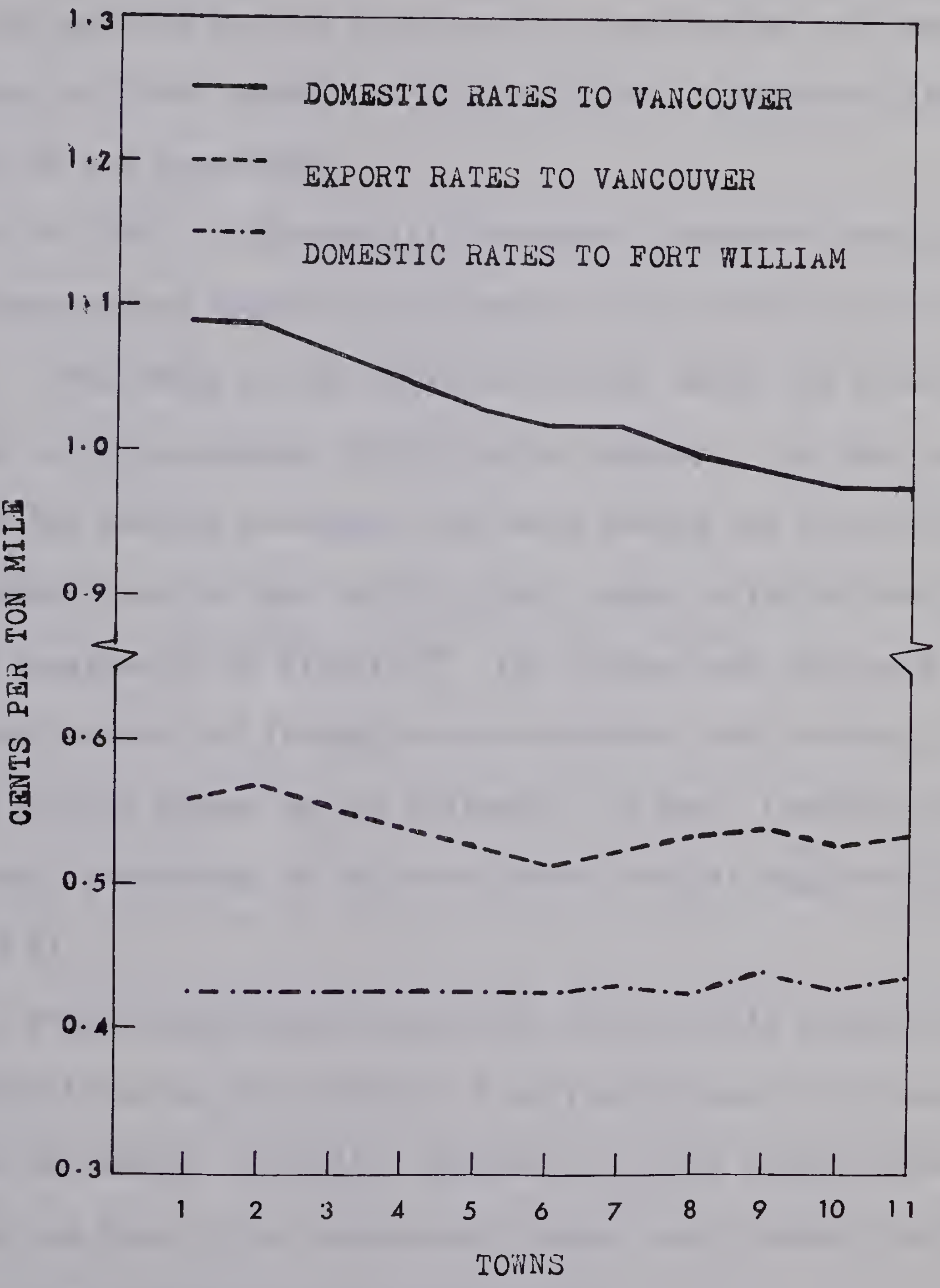
The emphasis which was laid on the expansion of the railway network in Canada at the beginning of the twentieth century, was in part responsible for the neglect in the improvement of the roads in most of the Provinces. The construction and maintainance of roads was entirely under the direction of the

---

[44] Information obtained from the records of the Alberta Freight Bureau in Edmonton, February, 1966.

[44a] Figures 19 to 22, and Figures 25 and 26, are based upon the Alberta Provincial highway maps for the relevant years. They show Provincial highways and in some cases local roads, but not forestry and other development roads.

COMPARISON OF RATES ON GRAIN SHIPMENTS FROM PEACE RIVER STATIONS - IN CENTS PER TON MILE (1931)



NOTE:- Towns 1 to 11 are, High Prairie McLennan, Culp, Tangent, Berwyn, Silverwood, Sexsmith, Grande Prairie, Beaverlodge, Demmitt, and Dawson Creek.

Source:- See Appendix C

Figure 18

Provinces, with the actual work delegated to the local authorities.[45]

In 1919, the Dominion Government increased its participation in road building, and by the Canada Highways Act of that year, a minimum grant of $80,000 was made annually to each province for construction and improvements on main highways and local roads. At the same time, a seperate highways branch was established by the government.

In Alberta in 1922, the Provincial Government commenced issuing grants to municipal and improvement districts, for work to be carried out on local and district roads. This money was in addition to that which was spent each year on construction and maintainance of Provincial highways. At this early date, however, it was the eastern provinces that were making the greatest steps in highway improvement, and as late as 1934, only eighty miles of hard surfaced roads had been constructed in Alberta.[46] The railway was obviously proving adequate for the movement of freight in the province, and trucking was not at this time a serious threat to the railways. In fact, trucks accounted for a relatively small percentage of the total motor vehicle registrations, up to 1926 (see Table 6).

From 1931, truck registration increased, and by 1941, nearly one quarter of all registered vehicles were trucks. Five years later, this proportion had risen to nearly one third. With this increase in truck registration, plus the increase in the size of the individual trucks, road competition developed rapidly as a serious competitor to the railways.

In 1924, only eighty seven miles of improved earth roads had been constructed in the Peace River region. These were provincially built highways,

---

[45] Glazebrook, op. cit., p. 245.

[46] Ibid., p. 251.

TABLE VI - GROWTH OF TRUCK REGISTRATIONS IN ALBERTA, 1923 - 1946

Year	Total Vehicle Registration	Truck Registration	Truck Registration as % of Total
1923	44,841	2,191	4.8
1926	65,590	4,362	6.6
1931	94,727	15,034	15.8
1937	100,434	18,080	18.0
1941	126,127	28,876	22.8
1946	138,868	41,823	30.1

Source: Canada, Year Book, D.B.S., Various years, Ottawa.

from Peace River town to Dunvegan, and from Grande Prairie westward towards Pouce Coupe (see Figure 19). Other roads connecting main settlements were expanding at this time, although in many cases they were in poor condition, being no more than simple wagon trails, which were cleared and widened as the need arose.

No figures are available for the amount of traffic which operated in the area in the 1920's, but if the number of farm trucks in operation, can be used as a guide, the traffic densities were very light. In 1931, there were only 259 farm trucks registered, in both the Alberta and British Columbia sections of the Peace River.[47]

The highways which were being constructed, were kept in operation by

---

[47] Canada, Census of Canada, 1931, D.B.S., Ottawa.

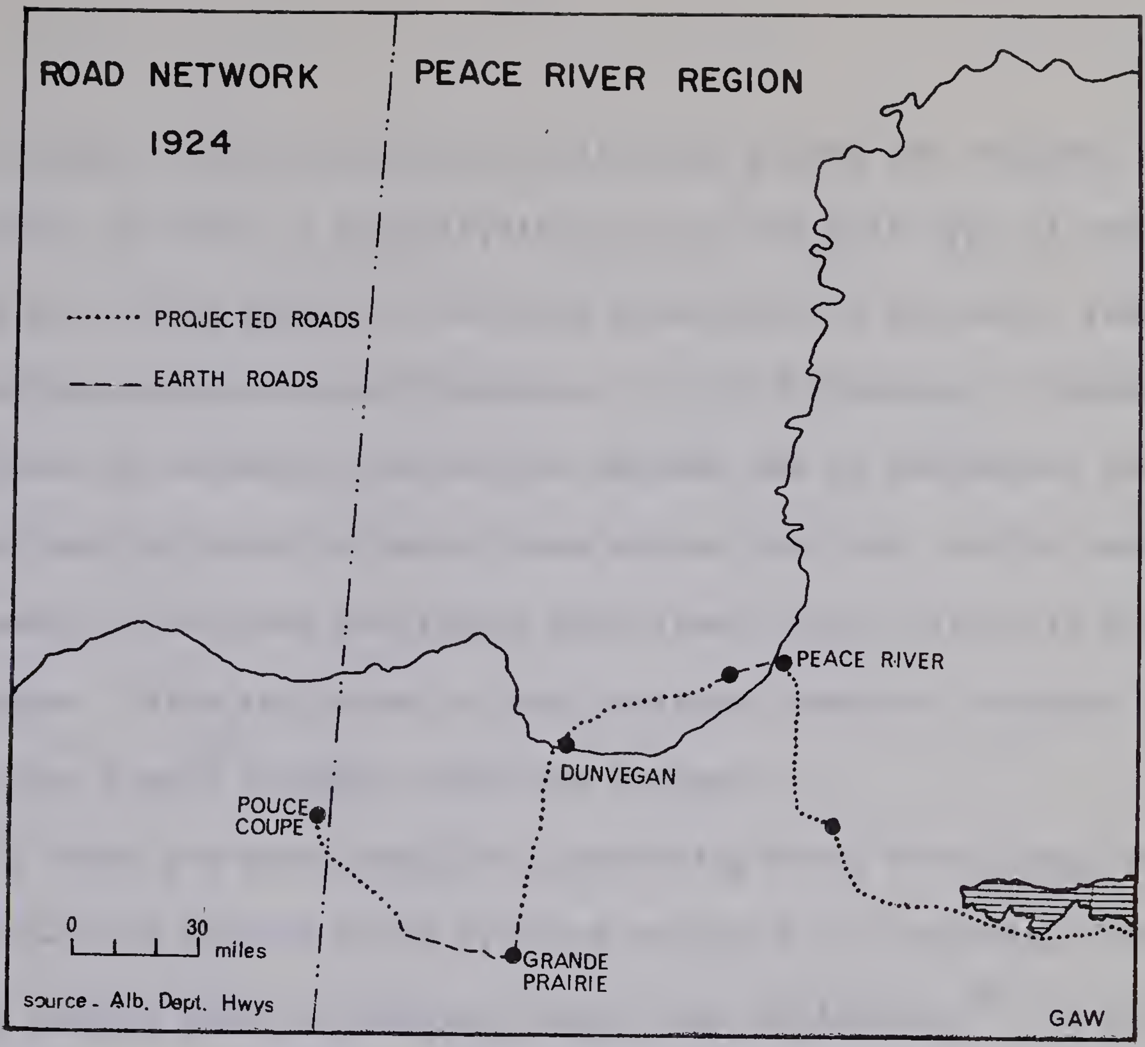


Figure 19

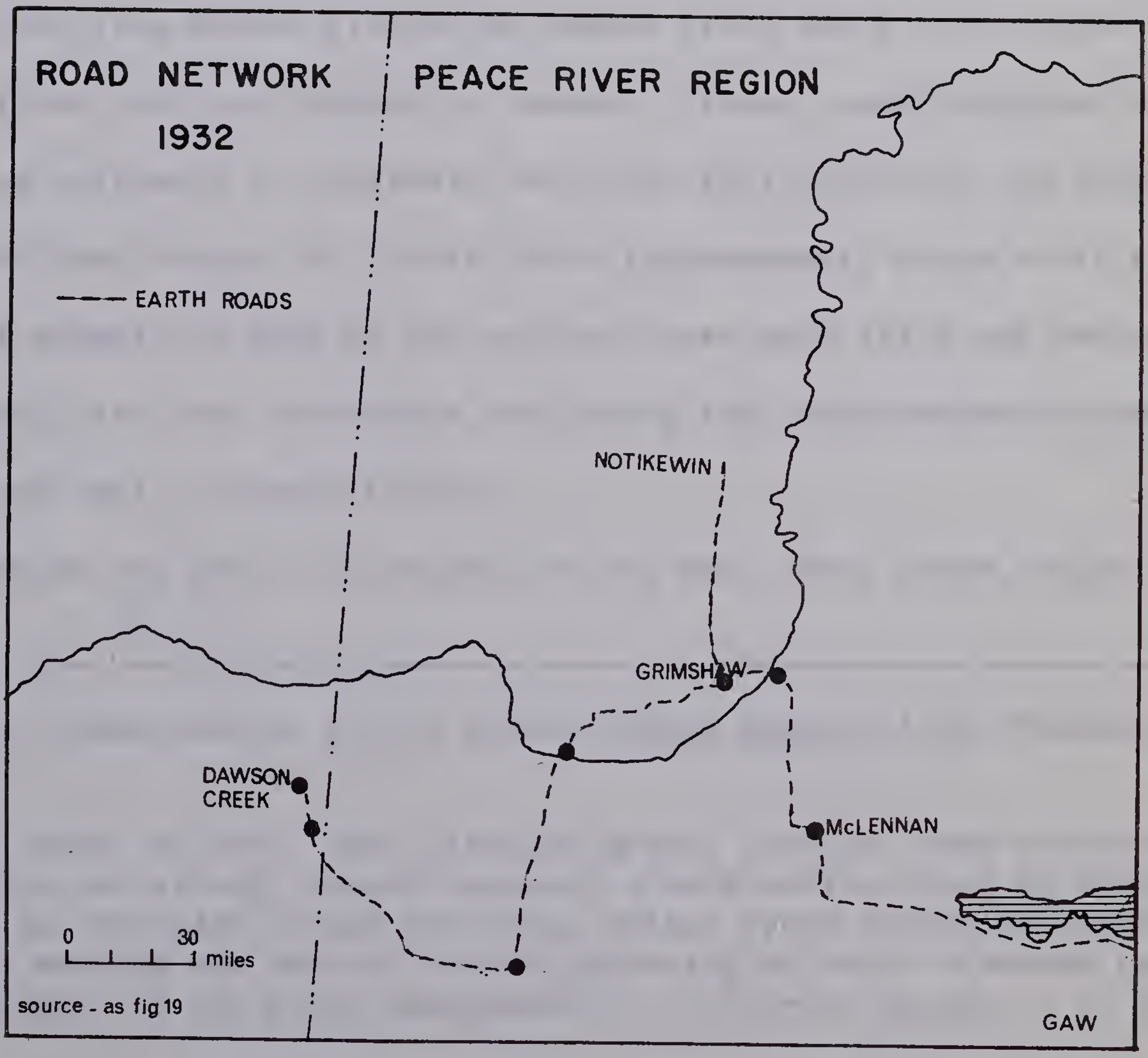


Figure 20

dragging and filling, after they had been initially graded and drained, and it was estimated that in 1924, it cost $1,875 per mile for this type of construction.[48] The most serious defect in the road situation, in the early years, was the lack of through connection with Edmonton. The old Athabasca - Lesser Slave trail was followed by necessity, before the railway was in operation, but it was used in conjunction with the water route across the Lake, as the overland route to the south of the Lake was little more than a trail, fit only for horse drawn wagons. With the advent of the railways, however, the boat service was withdrawn, and a more suitable route was planned.

By 1932, a route had been completed, connecting Peace River town, with Edmonton, but the road bed was still of earth standard, and trucking could not be expected to compete with the railway, under such conditions.[49] In addition, earth standard highways had been built, from Peace River town to Grande Prairie via Dunvegan, and from Grande Prairie to Dawson Creek and Fort St. John, connecting all the main settlements in between. These roads, together with the one leading northward to Notikewin, were the full extent of the highway network by 1932 (see Figure 20). With these improvements, there still remained the problem of access, as many of the settled areas were still not served by highways in 1932, the most noticeable ones being the areas between McLennan and Rycroft, and east of Grande Prairie.

This position was partly alleviated by the many local roads, which radiated

---

[48] Alberta, Department of Public Works, Annual Report, 1924, Edmonton, 1925, p. 7.

[49] It was stated in 1931, that although gravel surfaces were perfectly satisfactory for car travel, trucks required a hard surface road to operate economically, as excessive damage was done, unless speed and weight were regulated. No mention was made of trucks operating on earth standard roads. See Canada, Report of the Royal Commission .... 1931-32, op. cit., p. 102.

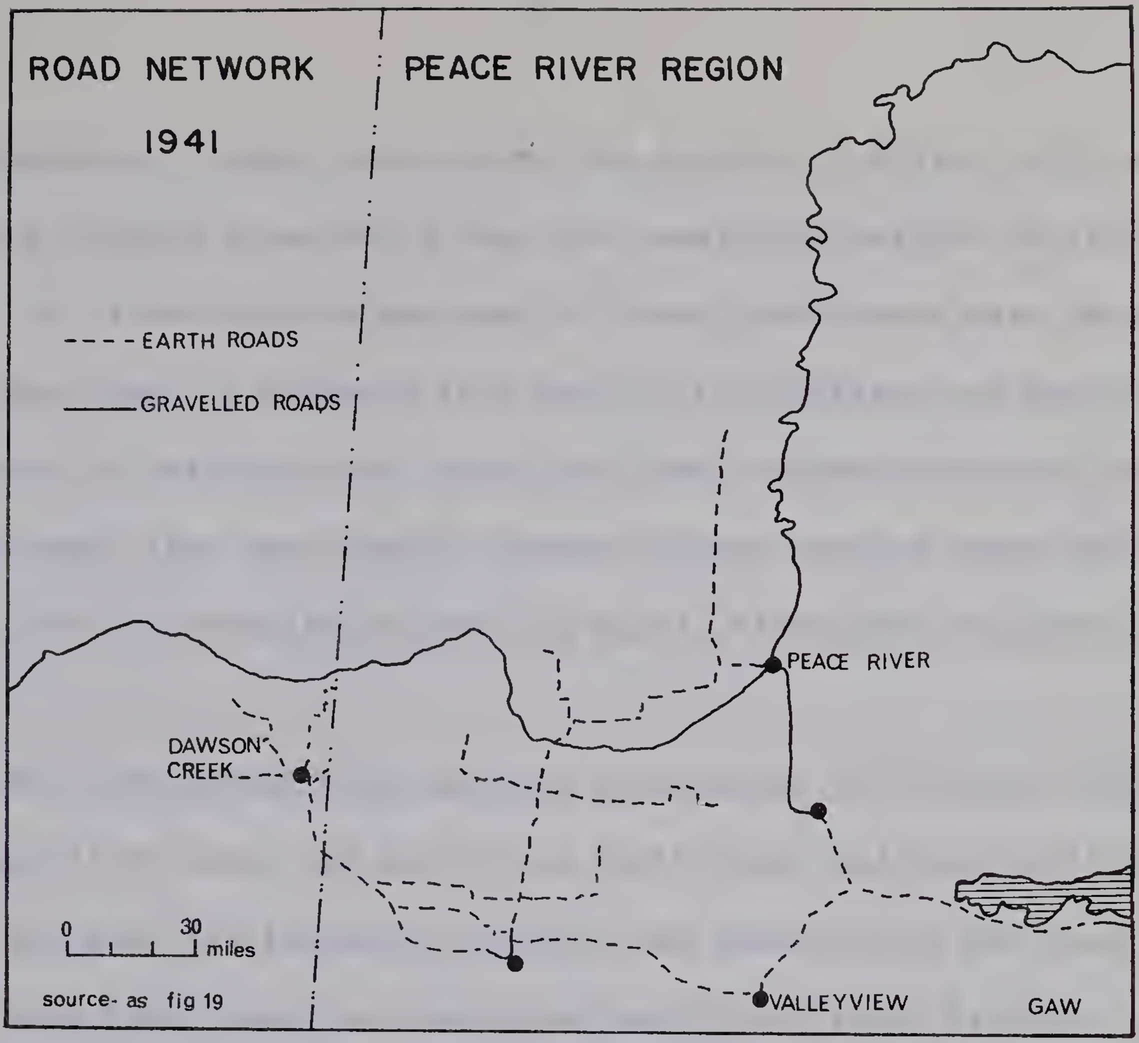


Figure 21

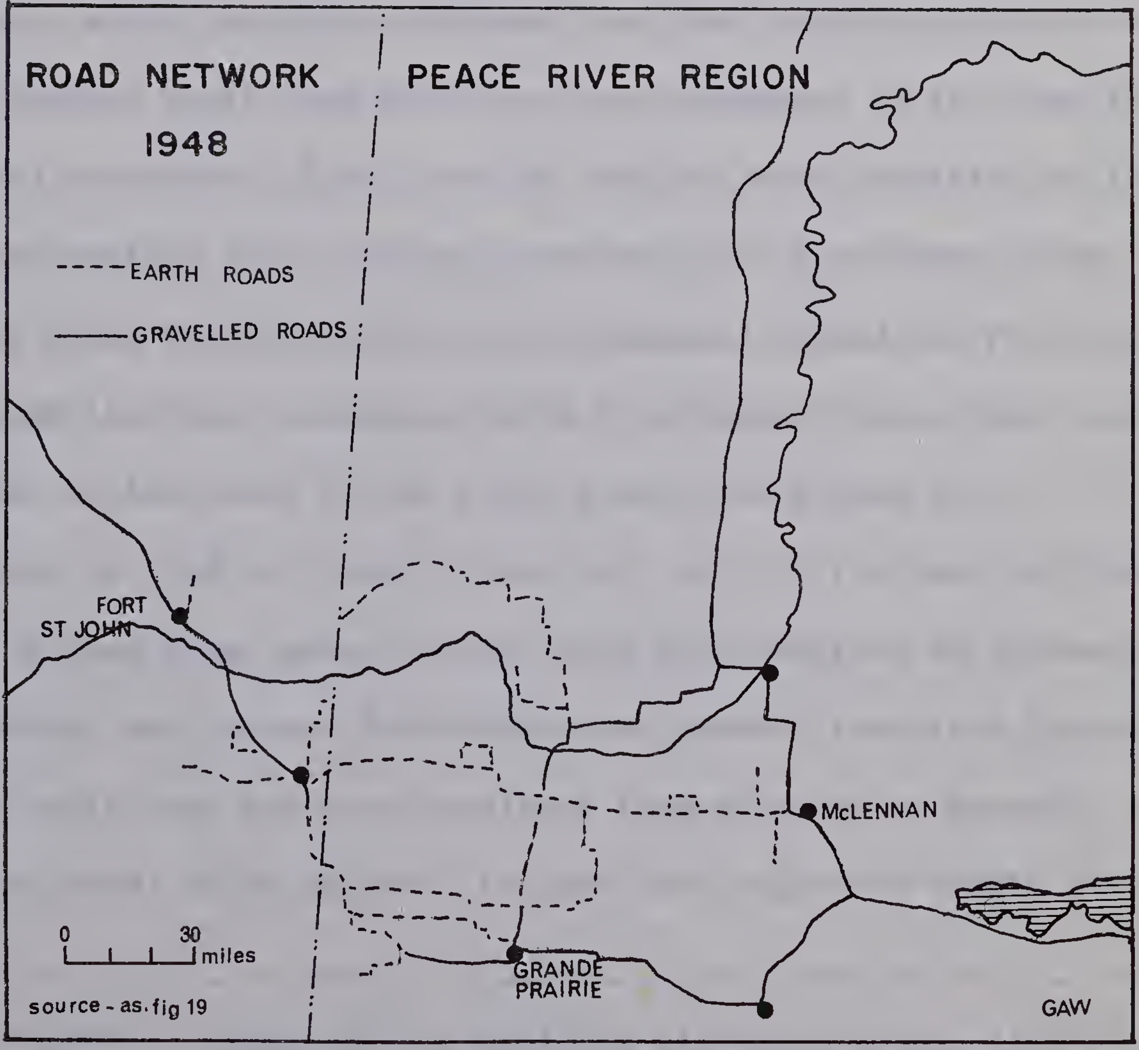


Figure 22

from the main highways. These roads served the purpose of giving service to the many outlying farming areas which were not readily accessible to the railway lines. It is not certain how many of these local roads were in existence in the 1930's, but there is evidence that many of the settlers cut their own roads from the end of existing ones, which had been constructed by the government.[50] Of the roads that were mapped, however, those serving areas east of Grande Prairie, west of Donnelly and west of Spirit River were the most important ones.

By 1937, the first gravel road had been constructed in the area, from McLennan to Peace River town, and good class earth roads had been built connecting most of the main settlements. By 1941, the gravel roads had been extended west from Peace River town, and north and west from Grande Prairie. In addition, important earth roads connected Grande Prairie with Valleyview to the east, to serve areas in which settlement had been extending steadily from 1931 onwards. Another earth road which had been commenced in the late 1930's, extended westward from Spirit River, and by 1948 had been completed as far as Pouce Coupe. Yet another road, running north and west from Hines Creek, served the areas around Clear Prairie, but was not completed beyond the Provincial boundary, although the route extending north from Dawson Creek, also reached the boundary, but to the south of the Peace River (see Figure 21).

The situation in 1948 had greatly improved, and all the main settlements were connected by good class gravel roads, with the exception of between Woking and Sexsmith, and between Beaverlodge and Dawson Creek (see Figure 22). In addition, an earth road had been completed from McLennan to Rycroft, in order to serve an area, which appeared to have been neglected before this time,

---

[50] British Columbia, Report of the Minister of Public Works, 1929-30, Victoria, 1931, p. 5.

presumably because it was well served by the railway.

The most meaningful figures to illustrate the importance of road building in the area, are the Provincial expenditures on road construction during the period 1923 to 1947 (see Figure 23).[51] It will be noticed that the expenditure on local roads was high up to 1931, and in two years, 1923 and 1931, these local roads accounted for more than the main highways in the Provincial expenditure. This Figure illustrates that road building to serve outlying farmers, was considered a prime objective in these years, and the construction of main highways was of secondary importance,because of the emphasis on the expansion of the railways.

Another illustration of the importance of the roads during this period, is the number of passengers, who were travelling over the highways in preference to travelling by rail. A bus service was inaugurated in 1942, travelling from Grande Prairie to the Provincial boundary. This service had expanded by 1946, when a regular service came into operation from Edmonton to Dawson Creek. Although no figures are available for these early years, it is obvious that these road operations had an adverse effect on the rail traffic revenue,[52] long before the rail freight traffic was significantly affected.

Road development in areas such as the Peace River, is carried out for one of three main reasons, none of which is exclusive or more important

---

[51] Another criterion was selected in an attempt to show the importance of road building in the Peace River, but unfortunately detailed figures were unavailable for the years concerned. The total expenditure of each municipality was extracted, in an effort to determine what percentage had been spent on road construction. Unfortunately, the latter figures were detailed under the general "Public Works" expenditures, and the figures for the roads were not seperated. Had this been possible, it would have served as a measure to illustrate the comparative importance of road construction in the municipal costs.

[52] Pers. comm., G.Walker, Traffic Manager, N.A.R., edmonton, July, 1965.

ALBERTA - PROVINCIAL EXPENDITURE ON HIGHWAYS AND LOCAL ROADS IN THE PEACE RIVER - 1923 TO 1947

Source:- Alberta, Dept. of Public Works, Annual Reports, 1923-1947

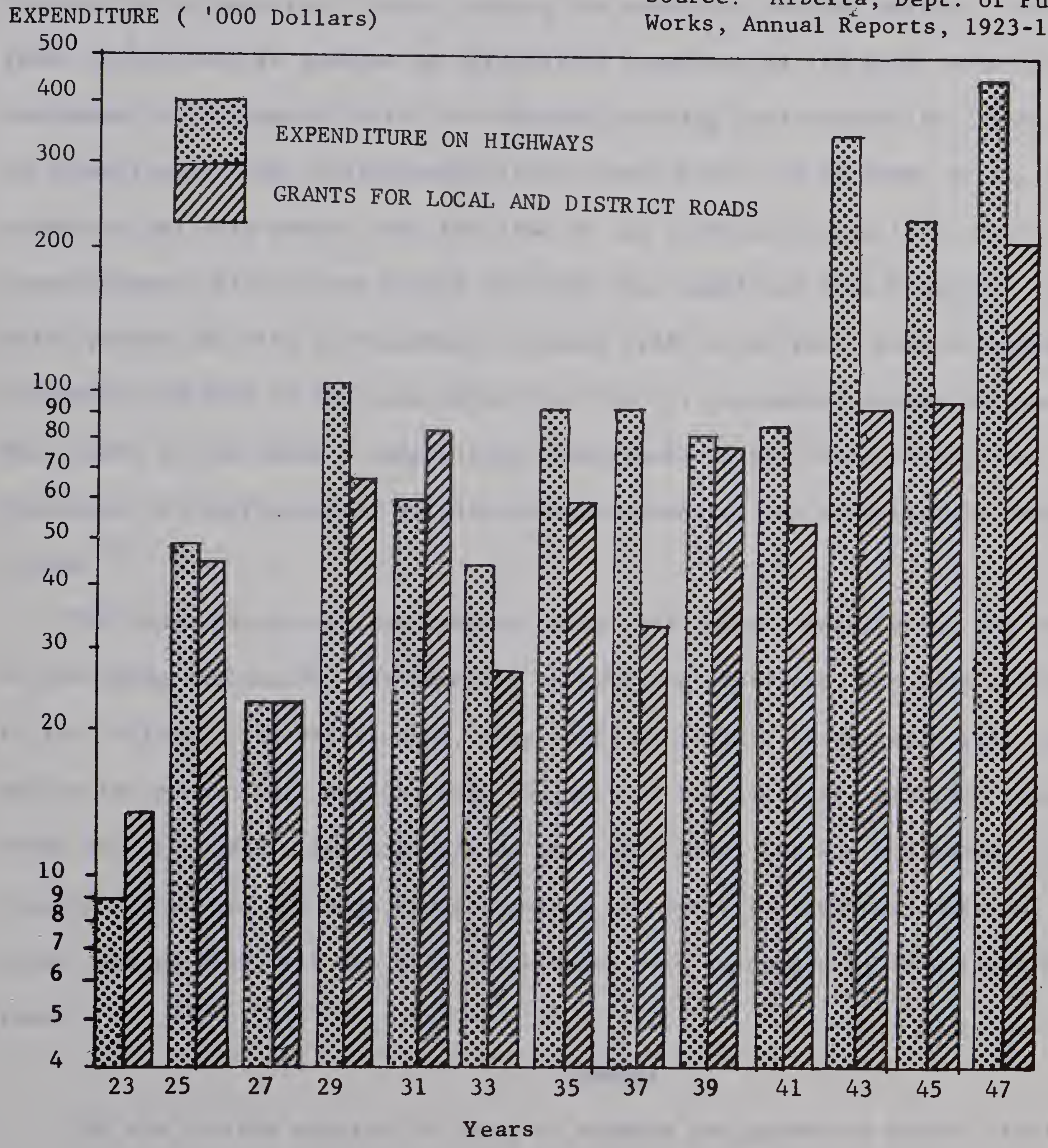


Figure 23

than the others. The first reason, is when no railway has been constructed to the area, and there is a need for roads to link the area with the main trade route through the country, whether it be road or rail. Secondly, to act as feeders to the main rail links, joining the area with outside markets. Finally, there is the need to provide an alternative route out of the area, either to complement or to compete with, the already existing rail connection. The first of these reasons can be discounted in the Peace River, up to 1948, as the N.A.R. served as the main outlet from the time of its construction in 1914, many years before a first class gravel road had been completed from Edmonton. The third reason can clso be discounted, before 1948, as no for - hire trucking companies operated in the area before the 1940's, presumably because of the poor state of the roads. Competition from trucks in the Peace River, was therefore of minor concern, as also was the extensive use of privately owned trucks.[53]

The roads which were constructed up to 1948, were primarily for the purpose of providing outlets for the farmers, in outlying districts, who were not served by the railways. In other words, they acted as feeders to the main rail linkage to the area. This was the case for most of the local and district roads which were provided. The highways on the other hand, had the additional service of connecting the main towns together, in order to encourage internal trade, and by 1948, all the main settlements were connected by some class of road.

SUMMARY

The aim in this chapter has been to examine the growth of modern trans-

---

[53] By 1941, only 484 trucks were registered in the Peace River region, see Canada, Census of Canada, 1941, D.B.S., Ottawa.

portation, from the early trails connecting the river settlements, through the period of railway growth, and up to the point where road development was expanding with the need to link outlying districts to the rail network. This phase of transport development is linked up with the economy of the region, which had changed from fur trading to agricultural production. With this change, came the need for the railway, to transport the bulk commodities of grain, timber and livestock, to outside markets, as the early trails proved inadequate for this task.

The growth of the road network, under the control of the provincial government, completes this phase of transportation development, as from about 1930 onwards, the roads filled the important role of linking the railway with previously inaccessible areas of agricultural production. During the next period of transportation development and economic growth, the emphasis is on the further expansion of the road network, which results in active competition between the two forms of transport media.

CHAPTER IV

DEVELOPMENT OF MODERN HIGHWAYS

From 1948 onwards, with the development of modern highways providing access to both Vancouver and Edmonton, the trucking companies have emerged as rivals to the railways, for the transportation of goods into and out of the Peace River region. Before this date, the railway had virtually a complete monopoly on all goods, but with the advent of this fast, reliable, pick-up and delivery service which the trucks were able to supply, the monopoly was ended, and active competition took its place. However, this situation has at present been stabalised to a great extent, as there is an increasing tendancy on the part of both the railways and the trucking companies to mark out their own spheres of influence in the transportation of commodities. The railway has now been forced to limit the largest part of its hauling to bulk commodities, such as lumber, grain and livestock, while the trucking companies concentrate on the high value, low weight foodstuffs and general merchandise, which have to be hauled into the area.

In addition to breaking the railway monopoly on freight hauling, the roads have proved to be the most potent force in the final breakdown of isolation, which had for so long been the inhibiting factor in the growth of the Peace River region. The construction of the main highways connecting the area with Vancouver, Edmonton and the north, has proved to be the most important factor in this breakdown.

Prior to giving a detailed description of the changes which have taken place in the transport field since 1948, a summary of post-war economic developments in the area, will be set out, in order to illustrate how these devel-

opments have accelerated the need for improved transportation facilities.

POST WAR DEVELOPMENT OF RESOURCES

Before 1948, agriculture had been the foundation of the Peace River economy, but after this date the economy broadened, involving changes in farming practices, and developments in the fields of mining, forestry and petroleum and natural gas.

The changes which have taken place in agriculture involve changes in emphasis more than anything else, as farmers cleared more land, and mechanization became more general throughout the region. In the immediate post-war years, wheat was almost the universal crop in the area. By the late 1950's, however, this had changed, and a glut of wheat, plus the persuasions of the Provincial agricultural representatives, had led to signs of diversification.[1] The problem of distance from markets had made crops with a high value in relation to their bulk, particularly desirable. The results have been the trend towards the production of seed crops, especially forage seeds, demands for which have been comparatively steady for many years.[2]

Table VII below, illustrates the trends which have taken place in agricultural production from 1951 to 1961. Rapeseed and flaxseed are the crops with acreages above the relative Provincial acreages, and it would appear that forage seed crops are now the dominant specialization of the area. Although this is the case, these forage crops, including those grown for hay and pasture,

---

[1] B.G.Vanderhill, "Trends in the Peace River Country," Canadian Geographer, Vol. 7, No. 1, 1963, p. 37.

[2] C.F.Bentley, Present and Future Agricultural Production in Alberta's Peace River Area, in The Changing Frontier, Addresses at the Conference in Peace River Alberta, October 5-6, 1965, Sponsored by the Peace River Chamber of Commerce with the Northern Alberta Development Council, Edmonton, 1965, p. 27.

TABLE VII - AGRICULTURAL PROGRESS IN THE PEACE RIVER REGION, 1951 - 1961

	1951				1961			
	Alberta		British Columbia		Alberta		British Columbia	
	P.R.	% of Prov.	P.R.	% of Prov.	P.R.	% of Prov.	P.R.	% of Prov.
Total Population	57,289	6	9,133	<1	68,394	5	18,171	1
Number of Farms	9,492	11	993	4	8,955	12	788	4
Occupied Farmland (acres)	3,499,697	7	408,483	9	4,341,245	9	434,175	10
Average size of farm (acres)	368	-	411	-	484	-	550	-
Wheat Acreage	461,154	6	41,341	41	388,368	6	35,052	40
Oats Acreage	434,420	19	38,300	38	269,598	10	27,196	31
Barley Acreage	165,810	7	14,191	44	446,662	15	28,123	44
Rapeseed Acreage	-	-	-	-	142,061	46	541	100
Flaxseed Acreage	33,464	24	3,146	47	85,292	23	1,645	53
Number of Cattle	54,620	3	6,131	2	116,178	4	12,425	3
Number of Horses	25,064	9	3,073	8	8,809	7	1,459	6
Number of Pigs	49,369	5	4,578	9	114,497	7	3,559	8

Note: Alberta Statistics, taken for the relevant Municipal and Improvement districts within Census districts 15, 16 and 17 for 1951, and Census division 15 for 1961. British Columbia statistics taken for Census division 10D - The Peace River Block.

Abbreviation used in Table: P.R. = Peace River region.

Source: Canada, Census of Canada, 1951 and 1961, D.B.S., Ottawa.

only occupy about 17 per cent of the improved land in the region.[3] The table also illustrates that wheat and oats have decreased considerably in acreages, while those of barley have increased, in the case of the Alberta figure, up to 15 per cent of the Provincial total.

Greater emphasis is being placed on livestock, especially beef cattle, and the table illustrated that although there have been no increases in the Provincial proportions, the actual number of cattle doubled between 1951 and 1961.

Another trend which can be discerned is the change in land holdings. Occupied farmland has increased by 27 per cent in Alberta, and 6 per cent in British Columbia, while the number of farms has decreased in both cases. This means that there has been substantial enlargement and/or consolidation of farm land, rather than extensive new settlement, up to 1961, as the farm sizes have increased considerably in both Alberta and British Columbia.

Much of the land which is still available for settlement is on the fringes. Whereas in the late 1950's, there was a sharp upsurge in the number of homestead entries (the region accounted for 75 per cent of the total Alberta entries),[4] by 1961 this demand had slackened, the only exception being around Fort St. John in British Columbia. In 1964 and 1965, however, there was a sharp increase in homestead entries in Alberta, and in the Peace River, townships were opened up to homesteading at High Level, south of Valleyview and south of Fort Vermilion (Appendix D).[5]

Since the 1940's, forestry has expanded into a major industry in the Peace

---

[3] Ibid., p. 25

[4] Alberta, Report of the Royal Commission on the Development of Northern Alberta, Edmonton, March, 1958, p. 18.

[5] Alberta, Department of Lands and Forests, Annual Report, 1965, Edmonton, 1965, p. 10.

River region. Lumbering activities expanded along the P.G.E. and N.A.R. rail lines, but with the depletion of accessible stands of timber close to the railways, and with the development of better highways and trucking facilities, there was a tendancy for the lumber operations to be carried out further back, in some cases to well over one hundred miles from the nearest main highway or rail connection.[6]

At the present time the forest land occupies approximately one half of the productive area of the region, and yet it is only contributing 10 per cent to the total value of primary production.[7] Table 8, gives details of the sawtimber statistics for 1964, and as can be seen, the present production is well below the gross allowable cut.

TABLE VIII - PRODUCTION OF SAWTIMBER, NORTHERN ALBERTA, 1964
m.f.b.m. (Thousands of Board Feet)

	Inventory	Annual Gross Allowable Cut	Present Production
White Spruce	21,261,400	354,400	
Balsam Fir	478,500	11,900	
Pine	5,500,200	110,000	
Total	27,240,100	476,300	79,675

Source: A.J.Hamilton, Future Sawmill Development in Northern Alberta, in The Changing Frontier, Addresses at the Conferences in Peace River Alberta, October 5-6, 1965, p. 11.

---

[6] *Ibid*., p. 20.

[7] T.G.Wright, Future Pulp and Plywood Development in Northern Alberta, in The Changing Frontier, *op. cit*., p. 5.

There appears to be no doubt that the region can support a much larger lumber industry than at present. The main deterrent in the past, has been the lack of access, which has resulted in a large number of small sawmills, which have been located as close as possible to the main rail lines and sources of supply.[8] With the improvements in transportation providing access into remoter areas, there is now a definite trend towards the larger more integrated mill.[9] One of the reasons for the smaller mills being uneconomical, is that in the past, less than 50 per cent of the product of the log was recovered as timber; the rest, i.e. branches, bark and sawdust, being either burned or left on the ground to rot. With the larger mills and improved transportation, much of this wood waste could be transported to pulping mills. At present, there are no pulp mills in the area, although there exists large areas of timber of pulpwood size. The main disadvantages to a development of this type in the area, are distance from markets, and the large capital investment which is required. The cost of new pulp mills at the present time, has been estimated at ranging from $50 million to $100 million.[10]

The most important post-war development in the Peace River region, has been that of petroleum and natural gas, especially the latter. Exploration has been going on since 1945, and it was in 1951, that the large natural gas fields were brought into production around Fort St. John.

Oil production in the area, was overshadowed by the discoveries which were made in the Edmonton and Calgary areas in the 1940's. The principal fields

---

[8] With a production having a value of less than $50, 000 to $60,000 per year, See A.J.Hamilton, Future Sawmill Development in Northern Alberta, in The Changing Frontier, op. cit., p. 12.

[9] Loc. cit.

[10] Wright, op. cit., p. 8.

in the Peace River region, which have been in production since the early 1950's, are around the Sturgeon Lake - Valleyview area, and at present these fields have a recoverable reserve of over 100 million barrels.[11] Production from these fields, in addition to oil from the Red Earth and Utikuma Lake areas, to the north of Lesser Slave Lake, is piped southwards, through the Peace River oil pipeline, to Edson and Edmonton, joining the major connecting systems. In British Columbia, major fields have been developed to the northeast, north and northwest of Fort. St. John, and production from these fields is piped south through the Western Pacific Products and Crude Oil Pipelines Limited, to the west coast. At present, great attention is being given to the most recent oil discovery at Rainbow Lake, eighty miles west of High Level, and construction of a new pipeline is proposed, which will connect this field with the major trunk system at Edmonton.[12]

Major fields of natural gas have been developed around Fort. St. John, and northwest of Dawson Creek. The gas from these fields is piped to the refinery at Taylor, ten miles southeast of Fort St. John, from where it is marketed to the west coast, via the Westcoast Pipeline, which was opened in 1957. In addition, smaller fields have been developed for the internal markets of the area. The Whitelaw field supplies the areas north of the Peace River, from Fairview to Grimshaw, while Grande Prairie is supplied from two fields to the north.[13]

---

[11] Economic Report on Certain Industrial and Other Factors Related to the Economy of the Central Peace River District in Alberta, Issued by the Northern Development Council, Grande Prairie, Alberta, January, 1965, p. 36.

[12] L.J.Richards, Changing Frontiers in Oil and Gas, in The Changing Frontier, op. cit., p. 49.

[13] Vanderhill, op. cit., p. 37.

At this point, whilst on the subject of pipeline transportation, it is interesting to speculate on the possibilities of transporting solids by pipeline. Studies of this kind have been carried out at the Research Council of Alberta, since 1948, when the concern for pipeline mechanics first arose, during the design of a pilot plant for the Athabasca oil sands, 200 miles northeast of Edmonton.[14] Tests were made, first in 1959, with the movement of coal in a slurry form, using crude oil as the liquid carrier, and secondly in 1962, with capsule pipelining, emphasising the movement of coal and grain.[15] Attention was drawn to the advantages of pipelining over road and rail transport, and it was estimated that not only would costs per ton/mile be less, but the mileages themselves would be shorter, because of the greater grade flexibility, facilitating the selection of more direct transportation routes.[16] At present, studies on capsule flow are continuing, and the Federal Government is considering providing the funds required to carry out the projected five year research and development project.[17] Should the tests prove that capsule pipelining could feasibly be used on a large scale in the near future, it need not be emphasised how the transport costs would be cut down in the Peace River region, due to the distances involved, and the one way nature of much of the traffic.

Two other natural resources which have to be mentioned, are iron ore and coal. Iron ore deposits were discovered in the Clear Hills, northwest of Fairview, in 1956, with proven deposits of 225 million tons.[18] A pilot plant

---

[14] G.W.Hodgson, Fluid Dynamics and Pipeline Studies at the Research Council of Alberta, Contribution No. 303, R.C.A., Edmonton, p. 3.

[15] *Ibid.*, p. 10

[16] *Ibid.*, p. 24.

[17] *Ibid.*, p. 30.

[18] G.R.Heffernan, The Development of the Clear Hills Iron Ore Deposits, and the Impact on Northern Alberta, in The Changing Frontier, *op. cit.*, p. 61.

is to be commenced, and it is estimated that construction will begin on a large commercial plant, early in 1967.[19]

Coal deposits are fairly extensive within the region, but most of them are generally uneconomical. The Smoky River area, however, west of Valleyview, is estimated to have a reserve of 3 billion, 300 million tons, and recent surveys have shown that there are more extensive reserves in the more southerly part of the Smoky coal field.[20] It would appear therefore, that the coal reserves in the Peace River are sufficient for present demands.

Finally, a brief mention of power resources. When electric power was first generated in the area in the 1920's, it was produced by small thermal units isolated in several population centers.[21] In the 1930's, transmission lines began to link generating sites, and from that time onwards, the power requirements increased. This increase in the demand for power, resulted in the installation of larger generating units,at Valleyview and Fairview. In 1964, additional power supply was provided by a transmission line from Wabamum, fifty miles west of Edmonton. There are several power sites on the Smoky and Athabasca Rivers, where hydro-electric plants could be developed to serve the area, should the need arise,[22] although at the moment, a very large potential hydro-electric generating project is in the process of construction on the Peace River, near Hudson Hope, and this should be completed in 1968.

CONSTRUCTION OF MAIN HIGHWAYS AND THE EXTENSION OF LOCAL ROADS

In 1942, the Alaska military highway was completed, from the railhead at

---

[19] _Ibid_., p. 63.

[20] Economic Report ...., _op. cit_., p. 34.

[21] _Ibid_., p. 36.

[22] _Ibid_., p. 37.

Dawson Creek to Fairbanks in Alaska, a distance of 1,523 miles. This highway, the construction costs of which were entirely born by the United States Government, in addition to providing an important military link with Alaska, resulted in a boom for the town of Dawson Creek, which in the decade 1941 to 1951, increased in population from 518 to 3,589. The N.A.R. captured the majority of the traffic associated with this increasing activity (see Table V), and the freight load reached the point where it became necessary to schedule four trains daily to Dawson Creek, requiring the services of forty one locomotives.[23]

In addition to Dawson Creek, many of the other communities along the highways leading to the town benefitted from the increased traffic. Up to 1952, all this traffic was funnelled through Edmonton, and the Lesser Slave Lake approach route, increasing the population of the towns and villages along the route, together with the associated service facilities.[24]

The Mackenzie highway, completed in 1948, although built primarily to serve the Northwest Territories, has had an important effect on the northern Peace area, giving former isolated districts access to the remainder of the Province. This highway runs north from Grimshaw to Manning and High Level, and on to Hay River, with a branch to Yellowknife on the north shore of the Great Slave Lake. The total distance from Grimshaw to Hay River, is 385 miles, and the first seventy miles was built entirely at the expense of the Alberta Government, because it serves the farming areas, tributary to Manning. From this point, to where the highway crosses the boundary of the Northwest Territories, the Provincial and Federal Governments shared in the cost of construction, while

---

[23] Northern Alberta Railway Company, unpublished mimeographed information leaflet, Edmonton, October 1, 1963.

[24] Vanderhill, *op. cit.*, p. 34.

TABLE IX - GROWTH OF TOWNS AND VILLAGES ALONG THE ALASKA HIGHWAY ROUTE 1941 TO 1951

Town or Village	Population 1941	Population 1951	% Increase Over Period
Dawson Creek	518	3,589	593
Grande Prairie	1,724	2,664	54.6
Wembley	188	251	33.5
Beaverlodge	331	514	55.2
Hythe	247	342	38.4
Pouce Coupe	251	459	82.8
High Prairie	-	1,143	-
Total Peace River region increase, 1941 - 1951			23.0

Note: High Prairie was not incorporated as a village until 1945, and as a town in 1950.

Sources: Canada, Census of Canada, 1951 and 1961, D.B.S., Ottawa.

the cost from the boundary to Hay River was entirely borne by the Federal Government.[25]

In 1952, the first direct outlet to the Pacific coast was established, with the completion of the John Hart highway. This highway was constructed across the Rockies, via the Pine Pass and Prince George, to Dawson Creek. Although no figures are available for the early years of operation, this outlet to the Pacific has increased the amount of traffic passing through and entering the Peace River area, in addition to reducing the costs of many goods, previously

---

[25] Alberta, Report of the Royal Commission ...., op. cit., p. 31.

routed via Edmonton, and now brought directly from Vancouver.[26] In the final three years of construction, the British Columbia Department of Highways spent $126,000 on its completion, and the highway is now almost all hard surfaced, with the exception of short sections near Dawson Creek, which will be complete in 1966.

With this outlet to the Pacific complete, it became obvious that the existing connection to Edmonton, via the south shore of Lesser Slave Lake, was inadequate, and in 1956, highway 43 was completed from Edmonton, through the Swan Hills and entering the Peace River region at Valleyview. This road, which is now completely hard surfaced, has proved to be the most important routeway into and out of the area, with a daily average traffic flow of over 2,000 vehicles in 1964, in comparison to 500 over the older route (see Figure 24). Although comparable figures are not available for earlier years, highway 43 must have had an adverse effect on the traffic flow over this older route. A test, carried out by the writer on population figures, showed that settlements on the older route have registered a significant population loss, partly as a result of being by-passed by the new route through Valleyview. Between 1951 and 1961, the areas bordering highway 2, between McLennan and High Prairie, showed a decrease of 24.3 per cent, although between these years the total population of the area rose by 19 per cent.[27]

In addition to these main highways, the region is now served by an excellent system of good inter-connecting roads. Most of these have been fully paved,

---

[26] The average daily traffic flow along the John Hart highway was nearly 2,000 vehicles in 1964.

[27] The area in which the test was carried out, lay on highway 2, between High Prairie and McLennan. Population figures were calculated for the areas lying eight miles on either side of the road, and gave the resultant figure of 1,735 in 1951, in comparison to 1,312 in 1961.

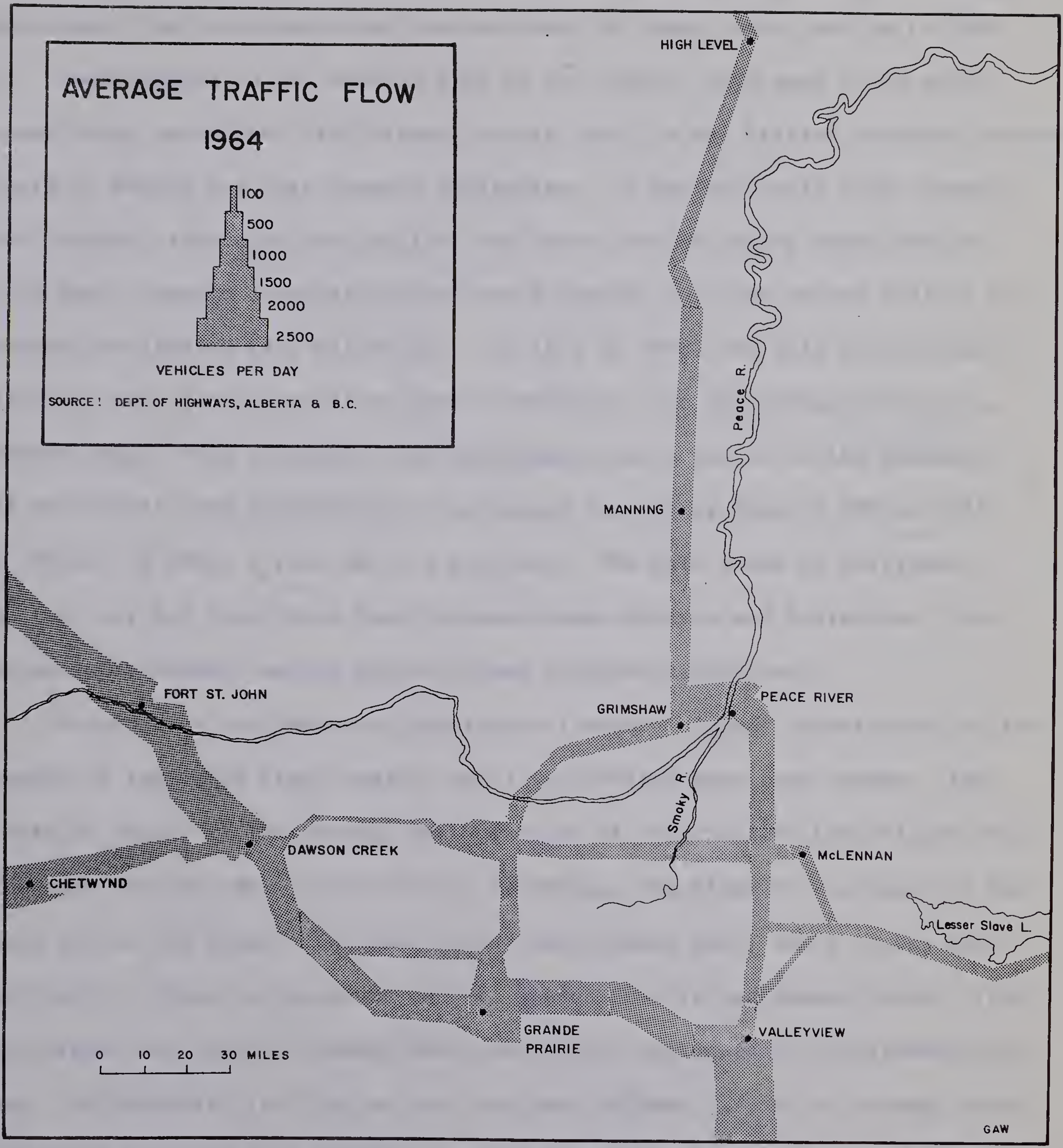

AVERAGE TRAFFIC FLOW
1964
100
500
1000
1500
2000
2500
VEHICLES PER DAY
SOURCE: DEPT. OF HIGHWAYS, ALBERTA & B.C.
HIGH LEVEL
Peace R.
MANNING
FORT ST. JOHN
GRIMSHAW
PEACE RIVER
Smoky R.
DAWSON CREEK
McLENNAN
CHETWYND
Lesser Slave L.
GRANDE PRAIRIE
VALLEYVIEW
0 10 20 30 MILES
GAW

Figure 24

with the exception of the section between Watino and Donnelly and roads east of the Peace River town to Valleyview section(see Figure 26). The Provincial Government has constructed and improved many of these roads, and up to 1950 it concentrated on the western part of the region, with good class gravel roads being maintained from Grande Prairie, west to the British Columbia boundary, north to Woking and east towards Valleyview. It was not until 1950, however, that asphalt surfacing was applied, the first sections being undertaken in that year, between Peace River town and Grimshaw, and from Grande Prairie east towards Valleyview (see Figure 25). As late as 1956, the only hard surfaced sections were from Peace River town to Fairview, and from Grande Prairie to Beaverlodge. This continued road improvement was a factor in the expansion of settlement, the population of the region increasing from 70,270 om 1951, to 96,407 in 1961, a rise of 37.1 per cent. The main areas of settlement in the past ten years have been between Grande Prairie and Valleyview, from Grimshaw northward, and in the area west of Peace River town.

In order to evaluate the importance of modern highway construction on the growth of the Peace River region, two illustrations have been chosen. The first of these, is the average daily pattern of traffic flow (see Figure 24). The main contrast which can be seen, is between the flows in the north of the area and in the south. The main Valleyview highway (43), has a strong flow of traffic, which is continued west to Grande Prairie and Dawson Creek. This is largely the traffic through these towns,that continues up the Alaska highway. In contrast, the flow on the John Hart highway, is not as strong, which indicates that the main stream of traffic is still orientated towards Edmonton. The roads in the north of the area have much weaker flows, with the exception of between Peace River town and Grimshaw, where most of the traffic is channelled up the Mackenzie highway. Finally, the Peace River town to Grande Prairie

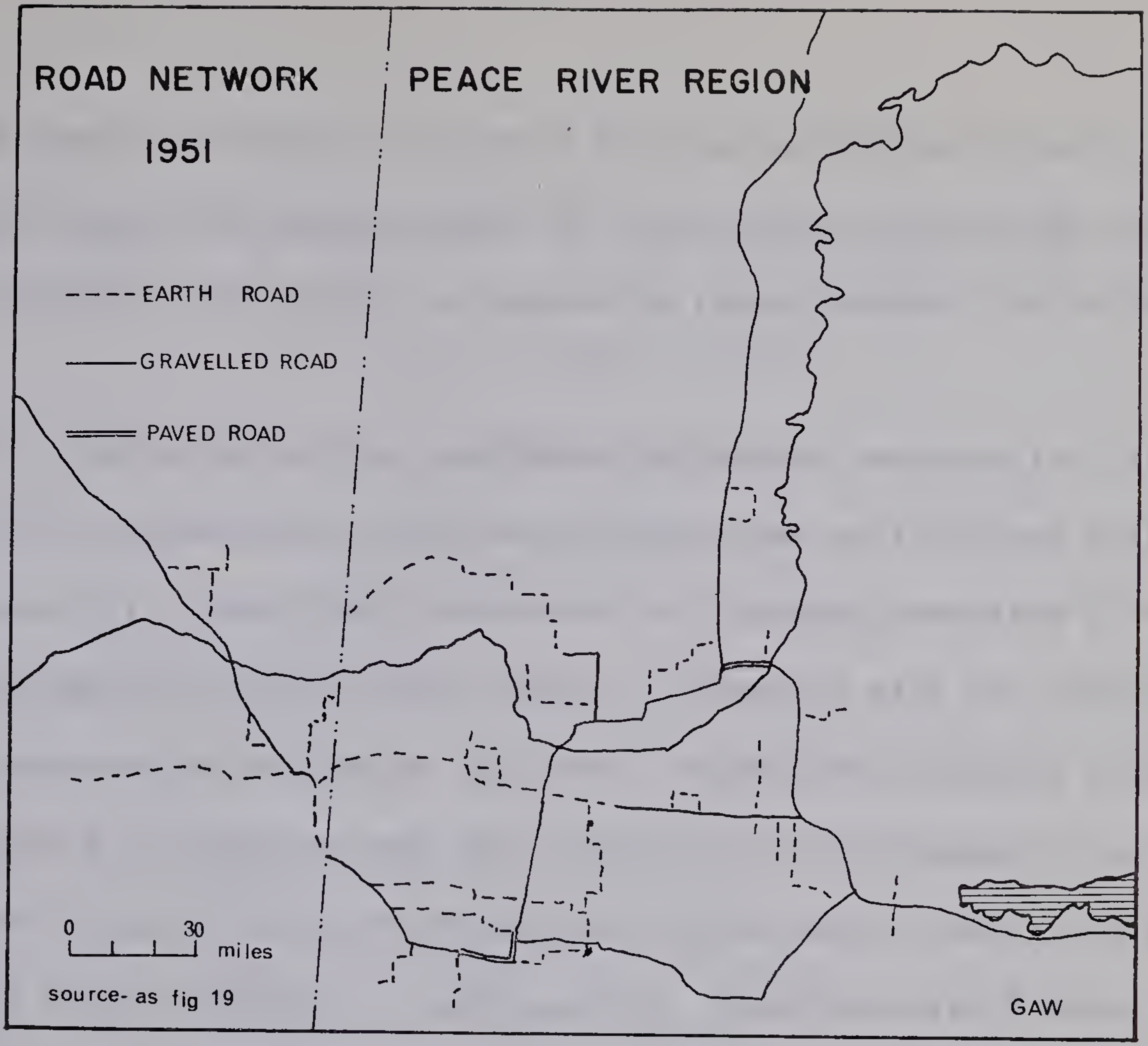


Figure 25

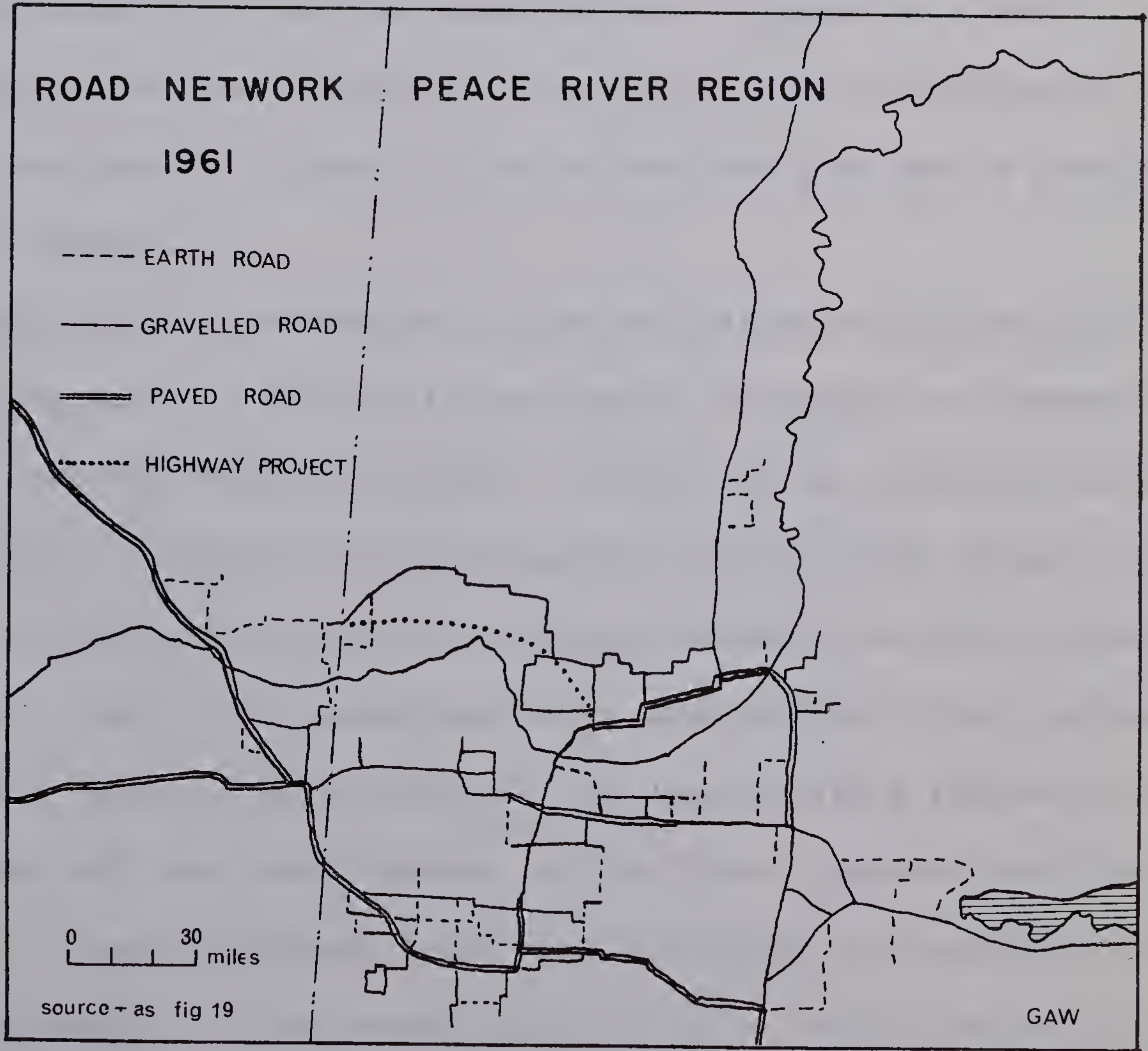


Figure 26

[illegible]

[illegible]

road and the highway traversing the central Peace area, between Donnelly and Rycroft, both of which have average flows of traffic and are obviously used, not as major routeways, but rather as connecting routes between the various settlements.

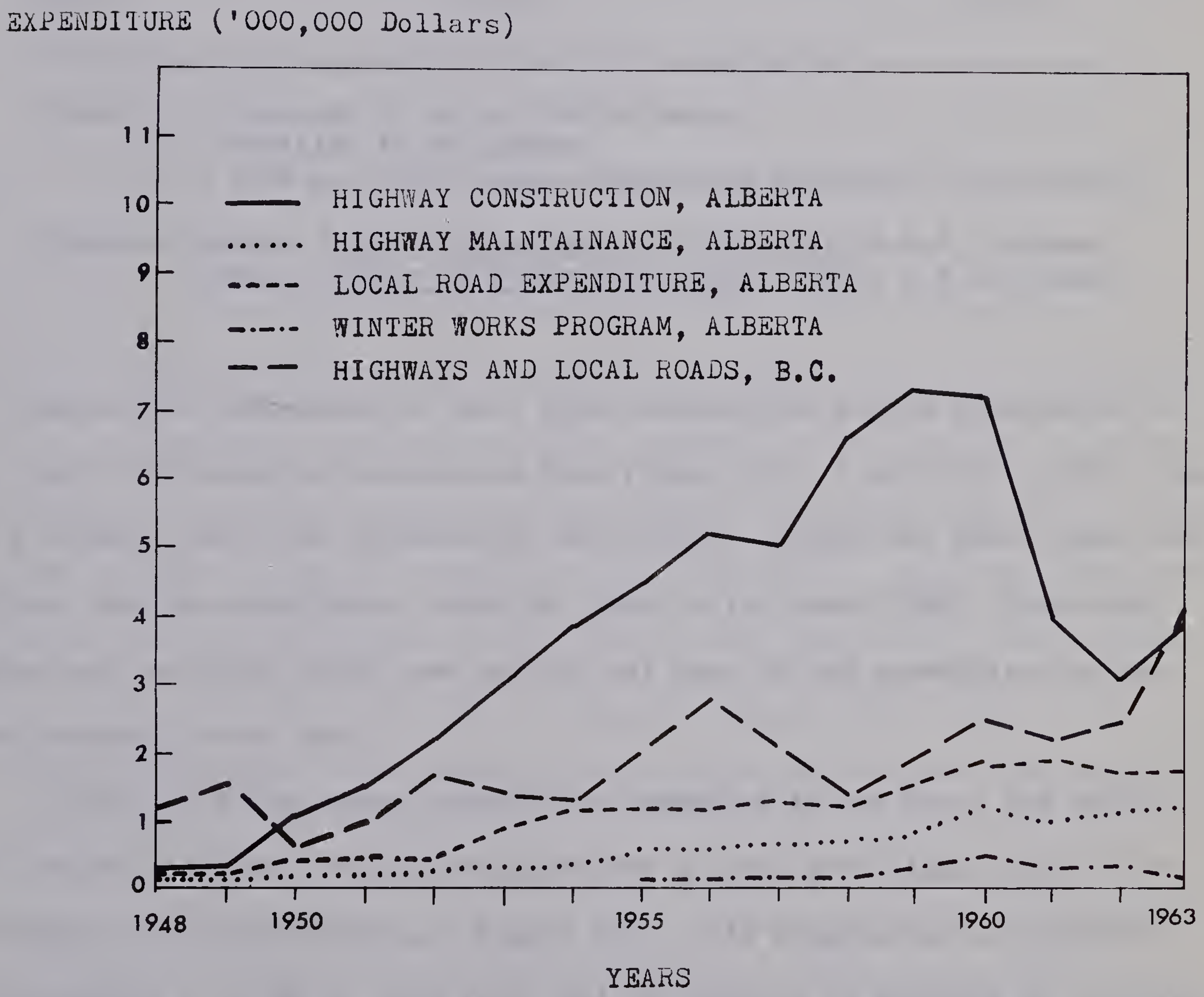
The other illustration of the importance of highway construction, is that of Provincial expenditure on the main highways and on local and district roads (see Figure 27). From 1948, expenditure on highways rose from $479,856, to a peak of $8,280,064 in 1960, after which it decreased with the completion of the major construction program in the area. Highway maintainance expenditure also rose, as would be expected with the completion of the highways, and by 1965, this work accounted for over 20 per cent of the total expenditure on highways in the Peace River area. Unfortunately, these detailed figures were only available for the Alberta section of the Peace River, as in British Columbia, total expenditure on road construction, is given as a whole, for both highway and local road construction and maintainance. This total expenditure has been indicated in Figure 27, but it does not give such a complete picture as for Alberta.

Associated with the construction of the main highways, has been the extension and upgrading of the local road system, to remedy the problem of access in the outlying farming districts. Records of the construction dates of the local roads are incomplete, but the general picture which emerges, is of concentration in the western part of the Peace, between Peace River town and Grande Prairie. Many of the roads which only consisted of a dirt surface, in the early 1950's, have now been gravelled, and many outlying farmers have had connections made with the main highways, to facilitate improved handling of their products. Greatly improved local road facilities are implied by the increase in the number of farm trucks operating in the area (see Table X).

PROVINCIAL EXPENDITURE ON HIGHWAYS AND LOCAL ROADS

PEACE RIVER REGION

1948-1963



Source:- See Appendix E

Figure 27

TABLE X - REGISTERED FARM TRUCKS, PEACE RIVER REGION, 1951 TO 1961

Year	Farm Trucks Registered Alberta	British Columbia[a]
1951	1,856[b]	653
1956	5,455[c]	480
1961	7,150	1,140

Notes: a.- Division 10 in British Columbia.
b.- Division 16 in Alberta.
c.- 1956 and 1961 figures taken from Division 15 in Alberta.

Sources: Canada, Census of Canada, 1951 and 1961, D.B.S., Ottawa.
Canada, Census of Prairie Provinces, 1956, D.B.S.,Ottawa.

Again, the importance of local road construction can be interpreted in the light of Provincial expenditure (see Figure 27). From 1948 to 1958, there was a steady rise, with increases up until 1961. After that date, there was a decline, but the significant point is, that at its peak (1960), Provincial expenditure on local roads, was over 25 per cent of the expenditure on the main highways in the area.

In 1955, a Winter works program was commenced in the area, and monies put forward under this scheme accounted for a large percentage of the total expenditure on local roads (see Figure 27). This program was in operation from December 1 to May 31 each year, and in addition to speeding up construction and maintainance, it provided work for seasonal employees, who otherwise may have been unemployed.

Money was also provided by the Provincial Government to assist in the construction of roads to natural resources. Their policy, with regard to these

various oil and lumber company enterprises, has been to allow them to construct whatever roads they require, in order to gain access to the oil fields or stands of timber. The Government has then taken each case individually, and contributed toward the cost of the particular road, if it was found that it would serve persons presently living adjacent to it, who were taxpayers.[28] Grants for these roads to natural resources varied considerably: in 1958, $10,000 was contributed; in 1960, the figure was only $2,000; and in the two years 1962 and 1963, $25,247 and $20,215 have been granted respectively.[29]

From the foregoing discussion, it can be seen that the Peace River region is now served by an excellent system of highways and local roads. In 1958, the Royal Commission on the Development of Northern Alberta, made several suggestions for improvements to the existing road system.[30] Several of these proposals have been carried out to completion, namely in respect to improvements to the Mackenzie highway and roads leading to this highway. In addition, at present a new highway is in the late planning stages, to run from Fairview to Hines Creek, then west to the Provincial boundary.[31] Although the Commission suggested several improvements to the road system, they were of the opinion that, "with the exception of two or three relatively minor roads ... the Government of Alberta is adequately meeting the needs of the Peace River Country for roads."[32]

---

[28] Alberta, Report of the Royal Commission ...., op. cit., p. 32.

[29] Alberta, Department of Highways, Annual Reports, 1958 to 1963, Edmonton, various years.

[30] Alberta, Report of the Royal Commission ...., op. cit., pp. 95-97.

[31] Pers.comm., Mr Easson, Northern Alberta Development Council, Grande Prairie, Alberta, July, 1965.

[32] Alberta, Report of the Royal Commission ...., op. cit., p. 97.

EMERGENCE OF THE TRUCKING COMPANIES

As in the case of many other areas, a study of the movement of goods by road transport in the Peace River region is hindered by the lack of any organised and central source of statistics. In only a few countries is road transport organised on a national basis, and more commonly the industry consists of large numbers of independant operators, whose scale of activities vary.

Before attempting to discuss the impact of trucking operations in the Peace River, it would appear desirable to mention some of the more significant trends which have emerged in the trucking industry in Canada, and which must be taken into account, if an adequate picture of the present transportation scene is to be presented.

Trucks have a great advantage over the railways in being able to give a complete door to door service. Although the railways, with their special pick-up and delivery rates, attempt to equal this service, they are hampered by the extra time and cost involved in transferring freight between rail cars, warehouses and road carriers. Trucks are faster than trains for short distances, and it was in this capacity that they initially proved to be a serious competitor to the railway. After a relatively slow growth in the 1920's and 1930's, short haul trucking expanded rapidly, until it reached the point where the railways were having serious difficulties in maintaining services.[33]

More significant from the railway point of view, has been the growth of long haul trucking, which has developed rapidly since 1950. The nationwide railway strike in August 1950, resulted in an unexpected test of the abilities of highway transport to ship long haul goods, especially between central and western Canada; improvements in the design and size of the trucks themselves;

---

[33] Canada, Report of the Royal Commission of Transportation, Vol. 3, July, 1962, 3 Vols., Ottawa, 1962, p. 11.

the rapid development and improvements in the highways; all combined to produce a breakthrough for the trucking industry in the 1950's. An indication of rate of growth, is given by the following indexes in long haul trucking growth, between central and western Canada, in the period 1953 to 1960 (see Table XI).

TABLE XI - GROWTH OF LONG-HAUL TRUCKING BETWEEN CENTRAL AND WESTERN CANADA 1953 TO 1960

Year	Index of Tons Hauled (1953 = 100)	Year	Index of Tons Hauled (1953 = 100)
1953	100	1957	204.5
1954	140.1	1958	275.5
1955	150.4	1959	378.9
1956	183.3	1960	403.5

Source: Tonnage estimates based on data obtained from survey of major trucking companies, See Canada, Report of the Royal Commission on Transportation, Vol. 3, July, 1962, 3 Vols., Ottawa, 1962, p. 16.

A significant factor in favour of the trucking industry, is that the railways, with a few exceptions (see page 82), may not legally depart from their published rates, whereas trucking companies can quote prices as they see fit. It is possible to compare the published rates of the two agencies, but the rates actually charged by the trucking companies are not the same as those published. This is more in evidence in Alberta, than in any other Province in Canada, as there are no regulations with regard to freight charges by the truckers, and in addition there are no rules regulating the operation of

trucking companies whatsoever.[34] A company may commence trucking into any center, and it is only the companies themselves, which impose any regulations, in accordance with what the traffic will bear.

Another trend, in this discussion of the Canadian transportation scene, during the past twenty years, is that of rail/road competition. Two Royal Commissions on transportation have been held (1951 and 1961), and in both of them, the major consideration has been the railway problem and policies. Under the earlier monopolistic environment, the railways had been able to equalize their financing, by a system of differential pricing. They were able to haul bulk commodities, which had a relatively low value per pound, such as grain and lumber, at low rates, while recovering most of their costs from the high rates applicable to finished goods, with a much higher value per pound, such as food and machinery. Without the low rates, a great deal of this bulk traffic would not have been able to move, as the costs would have been prohibitive, in proportion to the value of the commodity. With competition from the trucking companies in the 1950's, many of these finished goods were moved over the highways, leaving the railways with the low return, bulk commodity type of freight.

This increase in the extent and scope of competition after 1950, provoked an increasing interest in the benefits of trucking, as opposed to the use of the railway. The report in 1961, is replete with comments on the benefits that the shippers and the Canadian public were receiving from the competition provided by the trucking industry, and it was said that, "if the trucking industry can haul at rates below the rail minimum, public policy should do

---

[34] Pers. comm., W.Elliot, Alberta Freight Bureau, Edmonton, March, 1966.

nothing to hinder it."[35] The opinion was that active competition was in order, and that each transport medium should concentrate on the type of good which it was best suited to carry. The conclusion reached on the discussion of general principles, was that all of the various modes of transport in Canada should be given a fair chance to find their proper place within a competitive system, and that this was essential for obtaining, at a minimum cost, a balanced and efficient transportation system.[36]

The position as it now stands is not as competitive as may have been envisaged, and the railways are obviously attempting to regain the monopolistic position which they had so recently lost. This re-creation of the monopoly by the railways is progressing in two stages; the purchasing of private trucking companies, and competitive rate structures.[37]

The railways are finding it extremely difficult to compete with private trucking companies, so much so, that both the C.P.R. and the C.N.R. have purchased many of these companies, and between them, they now constitute the largest owners of trucking fleets in Canada. This means that each railway company has truck line systems, joining every major center from coast to coast. The railways are obviously attempting to modernize their transport system:

> not by operating rail services in accordance with present day demands, but by the purchase of the key competition in the trucking industry, with the sole purpose of re-converting freight shipment from highway transportation back to out moded rail transportation.[38]

---

[35] Canada, Report of the Royal Commission on Transportation, Vol. 2, December, 1961, 3 Vols., Ottawa, 1961, p. 23.

[36] *Ibid.*, Vol. 1, March, 1961, p. 30.

[37] G.R.Stranger, Railways Re-creation of the Transportation Monopoly, Hamilton, Ontario, (1962), pp. 1-52.

[38] *Ibid.*, p. 23.

The competitive rates now being charged by the railways are taking two forms; agreed charges, and incentive rates. The agreed charges are contract rates agreed between the railway and the shipper, whereby the railway offers substantial reductions in freight rates, on the understanding that the particular shipper moves over 75 per cent of his freight by rail. During the last decade, the scope of these agreed charge contracts has been increasing, and in 1962, in some parts of the country, freight rates to the shipper have amounted to reductions ranging from 30 to 36 per cent, under this system.[39] The incentive rates are those quoted for heavy loading, the rate decreasing as the weight of the shipment increases, with no stipulation on percentage of total freight, as in the agreed charges. These two types of rate structure are not condusive to the equalization of freight hauling, as the railways are obviously attempting to bring back the short haul traffic, thereby re-creating the transport monopoly.

Since 1948, much of the freight taken into the Peace River region, has been hauled by truck. There is one major trucking company which distributes in the area, plus several smaller ones, travelling regularly from Edmonton and Vancouver.

Trucking companies, which operate in Alberta, are free from many of the restrictions which are in operation in other Provinces. In Alberta, there are no restrictions on rates or operating franchise, in other words the trucks can operate to whatever centers they please, and can charge whatever rates they want.[40] This freedom, allows open competition, not only between the truck and rail operators, but also between the trucking companies themselves. The

---

[39] Ibid., p. 27.

[40] Pers. comm. Mr Telford, Alberta Freight Bureau, Edmonton, March, 1966.

Alberta Shippers Guide,[41] which quotes class rates on goods moving from Alberta centers, is not indicative of the prices which are actually charged. This fact makes it extremely difficult to estimate general freight costs, to and from the Peace River region. Most of the goods which are moved into the area, are carried on 'special' or 'contract' rates, and these are so flexible, that it is impossible to make comparisons, even between individual trucking companies. Of the eight companies who were interviewed for the purposes of this study, not one admitted to using these class rates. If this is the case for eight companies, it can only be presumed that there is an overall reluctance to the acceptance of these set rates.

Unfortunately, freight figures are not available to give a reliable estimate of the breakdown of commodities which are hauled into and out of the area. An indication of the total tonnages can be inferred from an examination of the figures supplied by Grimshaw Trucking Company of Edmonton, which are the largest operators within the region. This Company, commenced operations on a large scale in 1948, and by 1964 had a fleet of over seventy trucks per week operating in the area. The Company, whose main office was recently moved from Grimshaw to Edmonton, maintains depots at Grande Prairie, Peace River town, High Prairie, Grimshaw and Fairview, in addition to Hay River and Yellowknife in the Northwest Territories.

Out of the total freight which was moved by this Company in 1964, the inward haul from Edmonton accounted for 80 per cent.[42] The majority of this inward haul was general merchandise, such as food and supplies, and the only

---

[41] The Alberta Shippers Guide, published annually by the Alberta Motor Transport Association, Edmonton and Calgary.

[42] Records of Grimshaw Trucking and Distributing Ltd., Edmonton, March, 1966.

backhaul of any quantity was livestock and seed grain. The freight movements (see Table XII), for the main centers in the Peace River, illustrate that Grande Prairie, Peace River town and High Prairie, account for the largest tonnages into and out of the area, with Grande Prairie having the largest backhaul (mainly livestock).

TABLE XII - GRIMSHAW TRUCKING AND DISTRIBUTING LIMITED - SHIPMENTS OF FREIGHT
PEACE RIVER REGION - 1964

Depot	Inward Tonnages (From Edmonton)	Outward Tonnages (To Edmonton)
Peace River town	4,494	1,104
High Prairie	2,015	671
Grande Prairie	2,676	1,791
Fairview	468	317
Hines Creek	55	18
Worsley	45	16
Spirit River	317	-
Manning	184	-
Fort Vermilion	294	-
Grouard	287	95

Source: Records of Grimshaw Trucking and Distributing Limited, Edmonton.

The smaller companies, who operate into the area, also carry freight in the same proportion, i.e. 80 per cent inward haul, to 20 per cent backhaul.

Out of the fourteen companies which operate out of Edmonton, only six were prepared to divulge tonnages carried, and these varied so much, from company to company, that a reliable estimate of total tonnages could not be calculated. However, from the information supplied by Grimshaw Trucking, it would appear unlikely that the total tonnages hauled into the Peace River area by truck, would exceed 50,000 tons.[43]

Comparing this total to the rail figure of 241,451 tons shipped from Edmonton in 1964,[44] it can be seen that the N.A.R. still moves the majority of inward freight. However, when considering road/rail competition, it is not the volume of freight which must be taken into account, but rather the type of freight which is carried. The highly rated 'less than carload' shipments, have been the most seriously affected by truck competition,[45] and although these did not constitute large tonnages, they were the type of shipment on which the railway had depended to equalize its financing. Therefore, to compare the actual volume of shipments moved by truck and rail, would be a misinterpretation, and other criteria will have to be examined, in order to determine the effects of road competition on the N.A.R.

HIGHWAY COMPETITION AND RAILWAY EXTENSION

The competitive situation which existed in the transportation industry after 1948 in the Peace River area, was mainly the result of the improved access, with the extension of highways and local roads, plus the related facilities

---

[43] Grimshaw Trucking operate 33 trucks in the area, whereas the smaller companies each operate between 4 and 8 trucks.

[44] Appendix G.

[45] Less than carload shipments, are not exclusively a matter of volume, but rather of service and time involved, as the responsibility of loading carload shipments rests with the shipper, whereas less than carload shipments are loaded by the railways.

provided by the trucking companies. Due to the absence of reliable statistics, of freight movements by road, and comparative rate structures between rail and road carriers, alternative criteria have been selected to illustrate the effects of competition on the N.A.R.

The changes in rail revenue of the N.A.R. between 1948 and 1964, give a reliable indication of the effects of competition, although in some years, the changes are partly due to major rail extensions, which took place after 1948. In addition, after that year, the motorcoach became the dominant passenger carrier, and the railway lost its monopoly on this type of revenue.

The net revenue of the N.A.R., between 1948 and 1964 (see Figure 28), illustrates that before 1948 the railway had never shown a loss, but from that year onwards, with few exceptions, either the losses were considerable or the profits extremely narrow. From 1948 to 1950, there were losses incurred of $368,925, $475,635 and $70,418 respectively. These were mainly the result of the initial competition from the trucking companies, as there is no evidence that these years were in any way abnormal, with regard to either crop production,[46] or shipments of produce (see Table XIII).

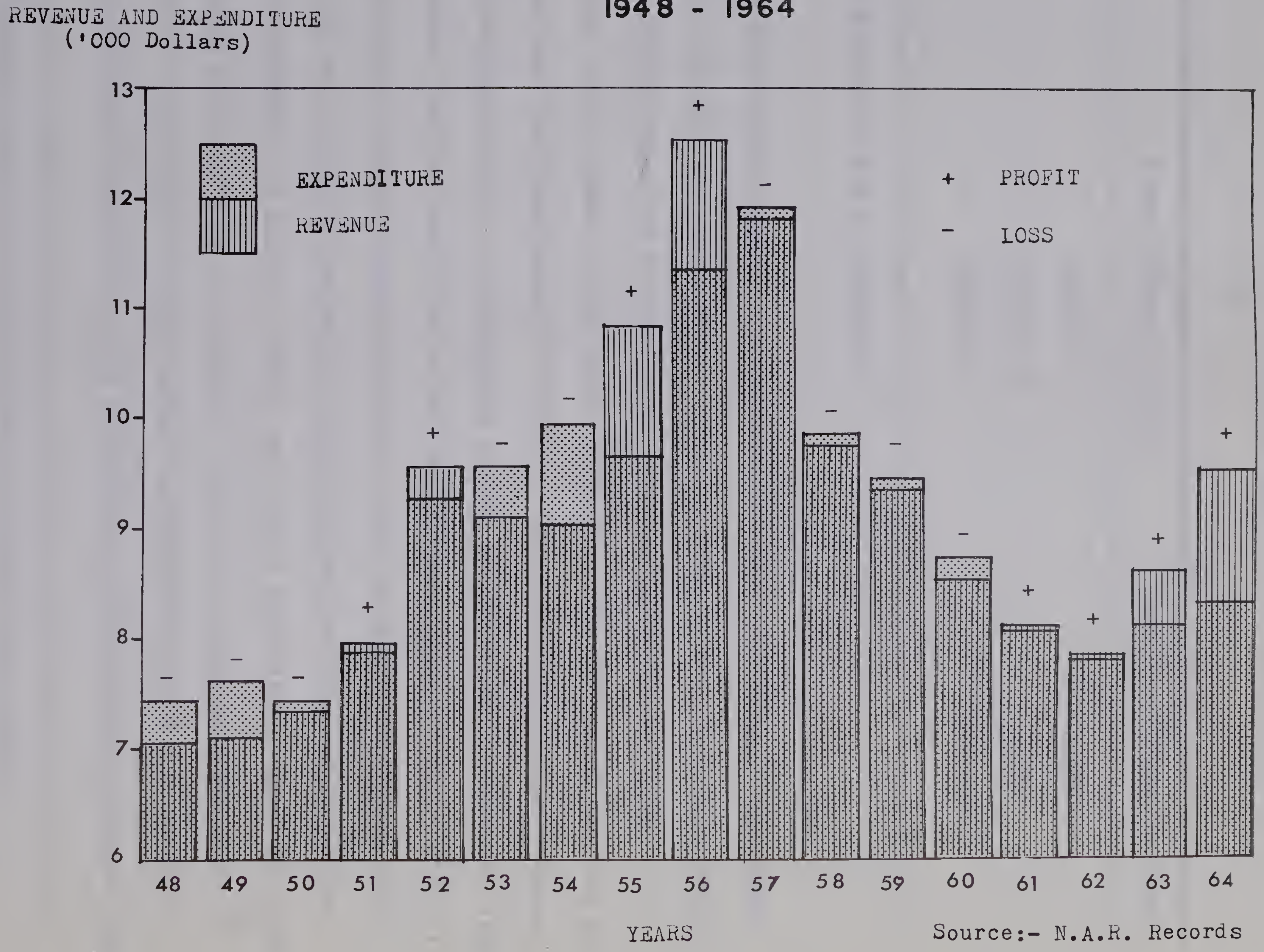
The years 1951 and 1952, show a distinct recovery, with profits rising to $283,664 in the latter year. In 1954, however, there was a further decline, down to a loss of $930,688. This loss, once again, cannot be attributed to a poor crop year, or loss of shipments, but must be the result of intensified highway competition. During 1955 and 1956, the profits of the railway rose. These increases can be partly explained by the shipments of grain and livestock, but particularly by the shipments of timber, which were increasing steadily, and

---

[46] Alberta, Department of Agriculture, Annual Reports, 1947, 1948, 1949, Edmonton.

N. A. R. OPERATING REVENUE AND EXPENDITURE

1948 - 1964



Source:- N.A.R. Records

Figure 28

TABLE XIII - SHIPMENTS OF GRAIN AND LIVESTOCK FROM N.A.R. STATIONS TO EDMONTON 1947 TO 1949

Year	Grain Shipments (Tons)	Livestock Shipments (Tons)
1947	325,360	11,655
1948	353,120	11,979
1949	359,080	12,276

Source: Records of N.A.R., Edmonton.

had more than doubled between 1946 and 1956.[47] From 1957 to 1963, the margin of profit and loss was extremely slim, with four out of the six years showing a loss. These losses can be partly attributed to the poor crop years, especially in 1957, when in some parts of the Peace River, over 50 per cent of the crops were left unharvested.[48] The main reason for these losses, however, was the extensive use of the Valleyview cutoff, by the trucking companies, from 1956 onwards, and the completion of the Pacific Great Eastern Railway (P.G.E.), from Vancouver to Dawson Creek and Fort St. John, in 1958. As a result of these road and railway improvements, competition for the 'less than carload' freight, passenger and express traffic was further intensified, until the point was reached when the 'less than carload' traffic was practically curtailed.[49] In addition, the carload freight traffic was affected by the P.G.E. extension, being particularly noticeable to and from points in the vicinity of Dawson Creek,

---

[47] Increase from 77,975 tons in 1946, to 158,195 tons in 1956.

[48] Alberta, Department of Agriculture, Annual Report, 1957, Edmonton.

[49] Pers. comm. Mr. Walker, N.A.R., Edmonton, July, 1965.

where the major share of traffic, particularly grain and lumber, was lost to the Pacific railway (see Figure 29).

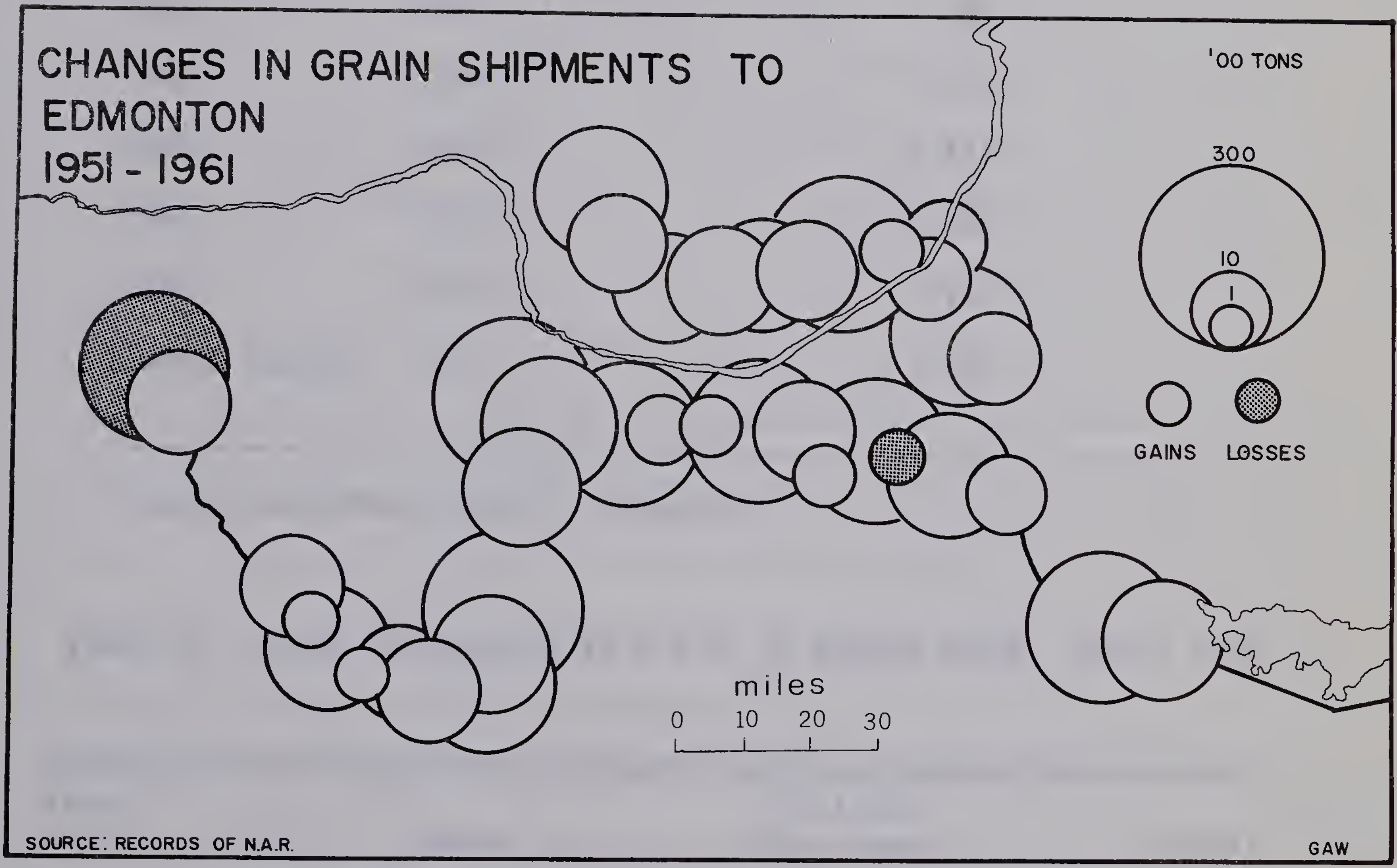
The P.G.E. railway, which was completed in 1958, runs 790 miles northward from Vancouver to Prince George and Chetwynd. At this point, the line branches to Fort St. John and to Dawson Creek. This rail link with the coast, has, in addition to providing a direct link to the Peace River region, helped several large industries develop along its route, mainly the petroleum and forest industries.[50]

The main products which are hauled out of the Peace River area by this railway, are grain and lumber. Much of this produce was originally carried by the N.A.R., and has resulted in a substantial loss in traffic to them. The extent of this diversion of shipments from the N.A.R. is indicated in Table XIV, showing carload freight interchange at Dawson Creek, the terminal of both lines. This table illustrates, that in addition to substantial increases each year since 1958, in freight interchange, the westbound freight change far exceeds the eastbound. This implies that large amounts of freight are now travelling direct to Vancouver, which were originally routed to Edmonton, via the N.A.R. Unforunately, the shipments are not segregated into individual commodities, but the proportion of grain interchanged between 1960 and 1963, is shown in Table XV.

A further illustration of the impact of the P.G.E. on N.A.R. shipments, is that of changes in shipments of grain and lumber from Dawson Creek. In 1956, there were 37,120 tons of grain shipped to Edmonton from Dawson Creek,

---

[50] Prince George Pulp and Paper Limited, is constructing an $84 million pulpmill at Prince George. In addition, Northwood Pulp Company Limited is building a $50 million pulpmill in the same area. See The P.G.E. Story, A Railways Dynamic Growth, Mimeographed information sheet, prepared by H.O. Armstrong, P.G.E., Vancouver, 1965.



SOURCE: RECORDS OF N.A.R.

Figure 29

TABLE XIV - FREIGHT INTERCHANGE AT DAWSON CREEK, 1958 - 1964

Year	Carloads Received by N.A.R from P.G.E.	Carloads Delivered to P.G.E. from N.A.R.
1958	7	18
1959	259	551
1960	326	1,142
1961	348	1,612
1962	392	1,441
1963	586	2,157
1964(6 months)	379	1,237

Source: Records of N.A.R., Edmonton.

TABLE XV - GRAIN INTERCHANGE TO P.G.E. AT DAWSON CREEK, 1960 - 1963

Year	Wheat	Carloads Other Grain	Total
1960/1	377	322	699
1962/3	475	662	1,137

Source: Economic Report on Certain Industrial and Other Factors, Relating to the Economy of the Central Peace River District in Alberta, Northern Alberta Development Council, Grande Prairie, Alberta, January, 1965, p. 44.

whereas in 1961 this had dropped to 5,400 tons (see Figure 29). Shipments of lumber dropped from 37,150 tons in 1951, to 19,850 tons in 1961, and down to 1,100 in 1964.

The years 1963 and 1964, showed a substantial increase in profits for the N.A.R., as compared to the previous six years. This increase was in part the result of the growth of both incoming and outgoing freight, produced by the construction and subsequent operation of the Great Slave Lake Railway (G.S.L.R.), to Hay River and Pine Point in the Northwest Territories. Construction, which commenced in 1962, is now complete, except for final ballasting. The line joins the N.A.R. at Roma Junction, eight miles west of Peace River town, and runs north to Hay River (377 miles), with a branch line to Pine Point. The primary purpose of the construction of this line was to serve Pine Point Mines Limited, which were at the time, having a mill constructed, to produce over 200,000 tons of lead zinc concentrate per annum, valued at over $20 million. This concentrate was then to be shipped to Trail in south-east British Columbia, for final treatment.[51]

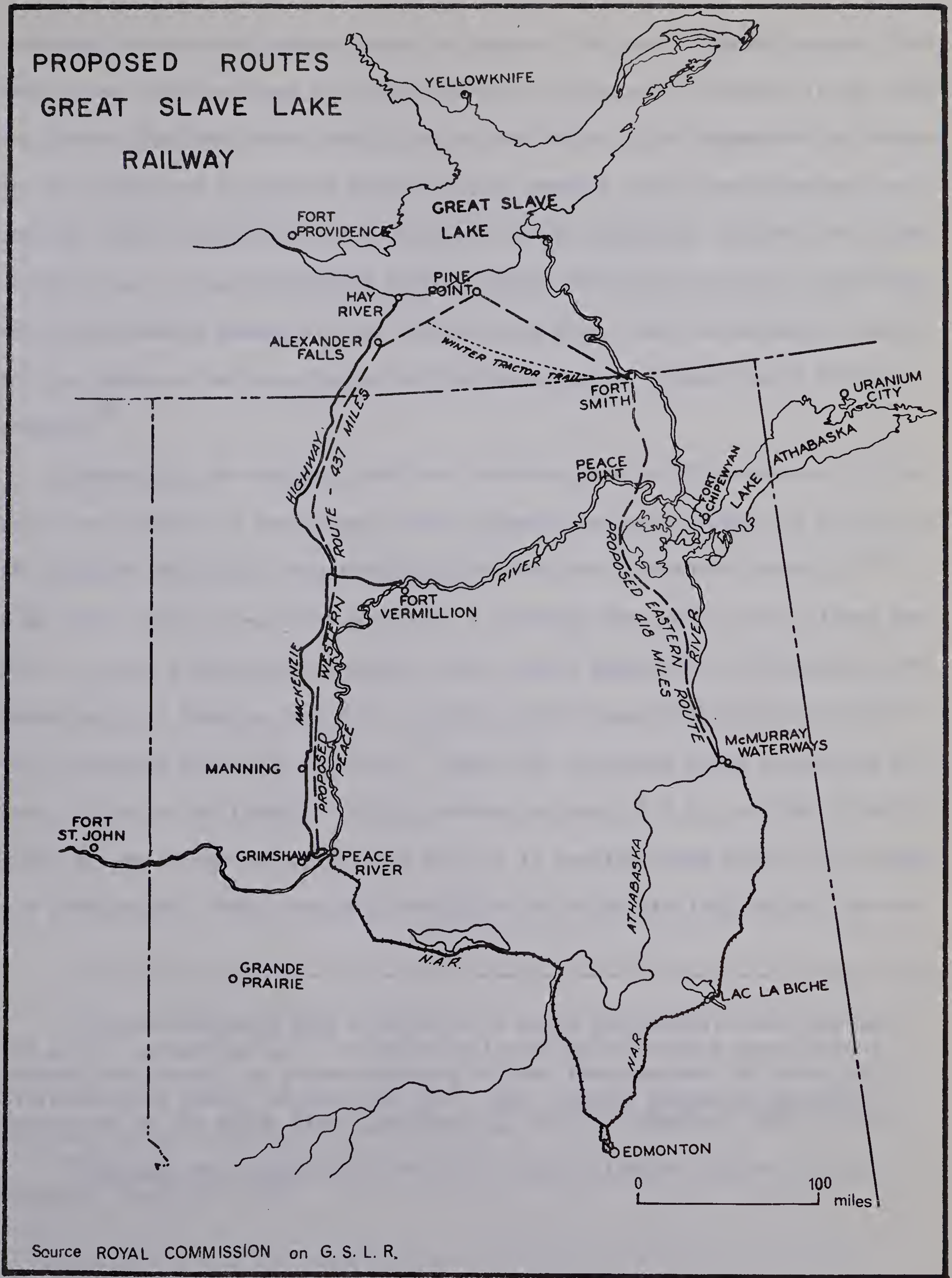
Prior to the commencement of this $86 million project,[52] a Royal Commission was called, to inquire into the feasability and proposed route of the railway.[53] The members of the Committee, however, reached different conclusions on the most suitable route (see Figure 30). The proponent of an eastern route, running from the N.A.R. railhead at Waterways, through Fort Smith, and to Pine Point, stated that this route would give prospects of growth to the mining

---

[51] Canada, Report of the Royal Commission on the Great Slave Lake Railway, Vol. 1, Edmonton, 1960, p. 7.

[52] Pers. comm., Public Relations Manager, C.N.R., Edmonton.

[53] Canada, Report of the Royal Commission on the G.S.L.R., op. cit.



PROPOSED ROUTES GREAT SLAVE LAKE RAILWAY

Source ROYAL COMMISSION on G. S. L. R.

Figure 30

activity, in the area through which it passed. The main argument against this route, was that there was no mining activity in the area, and that it was only conjecture that this would take place in the future. The arguments put forward for the choice of a proposed western route, running north from Grimshaw, were that it would develop the agriculture and lumber resources, already established in the area. It was also hoped that a western route would provide competition with the trucking companies, who were hauling grain down the Mackenzie highway for the farmers, and as a result of this competition, freight rates would be reduced.[54]

Eventually, the western route was selected, and as the proponents of this route had stated, it has helped in the expansion of agriculture and forestry in the adjacent districts: homestead applications have increased markedly;[55] High Level, which was little more than a trucking stop before the railway was built, is now a thriving community, with a large lumber mill and numerous new homesteads; at Manning, new grain elevators have been constructed, to handle the increasing shipments of grain. Table XVI, indicates these increasing shipments of grain and lumber from the stations on the G.S.L.R., and the potential grain shipments can be appreciated when it is realized that before the railway was constructed, there were only 500,000 acres of arable land in use, whereas

---

[54] It was estimated that a saving of 7 cents per ton/mile could be made for grain, shipped by rail, rather than truck, and that this would mean an annual cash saving, on a farm shipping 36 tons from Manning (56 miles north of Peace River town), of $140 per year. See Canada, Report of the Royal Commission on the Great Slave Lake Railway, Vol. 2, Edmonton, 1960, p. 120.

[55] Mimeographed communiqué, from the Public Relations Office, C.N.R., Edmonton, March 25, 1964.

the potential arable land adjacent to the whole route is 5,863,000 acres.[56]

TABLE XVI - TRANS-SHIPMENTS TO N.A.R. FROM G.S.L.R. AT ROMA, 1962 - 1965

Year	Grain	Carloads Lumber	Ore
1962	98	-	-
1963	916	158	-
1964	749	253	253
1965 (6 months)	401	296	2,691

Source: Records of N.A.R., Edmonton.

These increasing outgoing shipments are the basis for the rising profits of the N.A.R. in 1963 and 1964. Another basis is the incoming freight. During the time of construction of the G.S.L.R., the N.A.R. shipped large quantities of construction equipment to Roma. These shipments accounted for 36 per cent of the total incoming freight for 1964 on the railway, amounting to 88,977 tons, out of the total shipment of 241,351 tons for that year.

Having dealt with the factors of highway competition and rail extensions affecting the rail shipments of the N.A.R., it only remains to give an outline

---

[56] This figure was quoted by one of the commissioners in the report, from information given by the Research Council of Alberta Exploratory Soil Survey. It is probably an overestimation, however, as the figure given in the Report on Public Lands open for settlement, is 4 million acres, which includes all the Peace River region of Alberta. In addition, some of this 4 million acres may not be suitable for agriculture. *See* W.Odynsky, A.D.Paul and V.A.Wood, *Public Lands open for Settlement in the Peace River District of Alberta*, Department of Lands and Forests, Alberta and Research Council of Alberta, Edmonton, 4th. ed. rev., 1961, p. 9.

of the motorbus operations in the region. Canadian Coachways Limited, which commenced a service into the area in 1946, operate from Edmonton, and serve all the main communities in the Peace River area. This company links up with Northern Stages Limited at Dawson Creek, which operate regular services on the John Hart highway, as far south as Prince George in British Columbia. The passenger statistics, illustrated in Table XVII, show the amount of business which the Edmonton Company now hold, part of this having been taken from the N.A.R., and part newly created business, with the increasing mobility of the population.

TABLE XVII - CANADIAN COACHWAYS - PASSENGER STATISTICS
1962 - 1965

Year (June to May)	Edmonton to Dawson Creek[a]	Edmonton to Grande Prairie[b]	Edmonton to Manning[c]	Edmonton to Fort Vermilion
1962/3	21,667	26,652	-	8,103
1963/4	19,801	27,261	-	11,177
1964/5	20,889	29,224	6,470	9,823

Notes: a.- Via High Prairie, Donnelly, Rycroft, Spirit River.
b.- Via Valleyview, Peace River town, Fairview.
c.- Via Valleyview, Peace River town.

Source: Records of Canadian Coachways Limited, Edmonton.

In 1955, the Company commenced express freight carriage in the area, using special vehicles known as 'brucks', which are half bus and half truck.[57]

---

[57] A bruck provides passenger seating for twenty persons at the front, with 6,000 cubic feet of heated cargo space at the rear.

Since 1955, carriage of freight has been steadily increasing, until it now contributes over 30 per cent of the total revenue of the Company (see Table XVIII)

TABLE XVIII - CANADIAN COACHWAYS - PASSENGER AND FREIGHT REVENUE, 1962 - 1965

Year	Passenger Revenue $	Freight Revenue $	Freight Revenue as % of Total
1962/3	307,412	145,867	32
1963/4	329,536	169,880	34
1964/5	335,564	180,224	34

Source: As for Table XVII.

SUMMARY

With the development of road transport after 1948, the railway lost its monopolistic position, in the transportation of freight and passengers, especially the traffic into the Peace River region. The construction of main highways and local roads, aided by increasing Provincial expenditure, has stimulated the growth of trucking operations, which are comparatively free from restrictions within Alberta.

A comparison of freight movements between road and rail carriers, is not indicative of the rising competition between the two forms of transport media. An examination of the changing revenue of the N.A.R. provides a clearer picture of how the competition has affected the railway. The outgoing rail freight has not been influenced to any extent by the trucking operations, and it is the 'less than carload' freight, shipped into the area, which has suffered, and

which has had such an adverse effect on the net profits of the N.A.R.

In addition to the trucking company operations, the extension of the P.G.E. line to Dawson Creek, has taken away much of the outgoing freight from the N.A.R. To counteract this, the construction of the G.S.L.R. to the north has stimulated traffic on the N.A.R. lines.

The final stage of transportation development in the Peace River region, is marked by the rapid growth of road transportation, in competition with the railways. This change, is related to the expanding economy of the region, as new areas of production and markets are linked.

CHAPTER V

PRESENT DAY COMMODITY FLOW PATTERNS

In the Peace River region, as in any part of a country where the economy is reasonably well advanced, the pattern of commodity movements is complex and dependent on a large number of inter-related factors, such as transport facilities, production patterns and the distribution of population. All of these factors exert various influences on the direction and nature of the commodity shipments and receipts.

In the Peace River, the distribution of population has an important influence on these movements, and as can be observed in Figure 31, this distribution is far from uniform. The settlement pattern is dominated by two cities, Grande Prairie (population 10,365) and Dawson Creek (13,000). In addition, there are a number of towns with a population of between 2,000 and 5,000, i.e. Peace River town (3,318), Fort St. John (5,000) and Valleyview (2,142). The majority of settlements, however, are those with a population of between 50 and 500, and most of these occur around the central area of the region. Clearly, the pattern of commodity flow will be related in part to this distribution of population (see Figures 31 to 35).

The aim in this chapter, is to establish the pattern of commodity flow, by rail and road, as it exists at present. The abundance of statistical information which was made available to the writer, explains the bias towards commodity movements by rail. Information on road transport was obtained entirely by interviewing personnel of the various trucking companies who operate in the area, and although there were deficiencies in the information available, an attempt has been made to illustrate the differences between road and rail commodity flows.

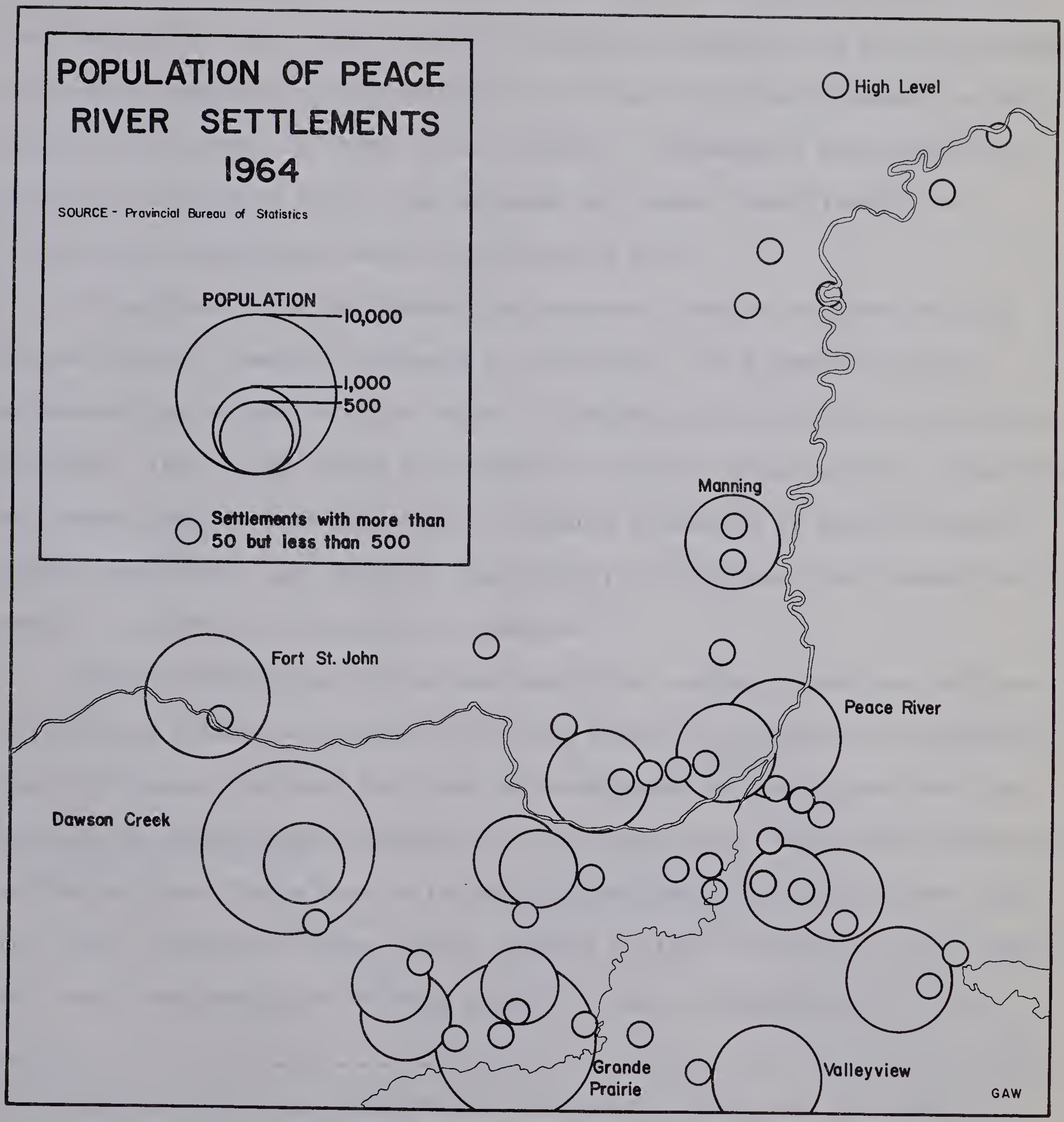

POPULATION OF PEACE RIVER SETTLEMENTS 1964
SOURCE - Provincial Bureau of Statistics
POPULATION
10,000
1,000
500
Settlements with more than 50 but less than 500
High Level
Manning
Fort St. John
Peace River
Dawson Creek
Grande Prairie
Valleyview
GAW

Figure 31

COMMODITY MOVEMENTS BY RAIL

Precise estimates of the railways share of the total goods carried into the Peace River region, are virtually impossible to obtain, but from the figures which were available, it was obvious that in this area, road transport is well behind the railways, in terms of tons carried. Furthermore, the commodities which the railways do carry, such as grain and lumber, traditionally are regarded as being better suited to carriage by rail.

An analysis of the individual flow patterns, provides the most detailed account of rail commodity movements in the region, but a number of general statements can be made from the details of shipments and receipts at individual stations. The tonnage volume of shipments (dominated by agricultural commodities), is greater than the tonnage volume of receipts (dominated by general manufactured commodities). In addition, the majority of both inward and outward rail traffic originates or terminates in Edmonton.[1]

Traffic densities on various sections of the railway system are indicated by the gross pattern of commodity flow (see Figure 32). Densities are heaviest east of McLennan, although the flows on the McLennan to Peace River town, and McLennan to Grande Prairie sections are also quite considerable. The densities on the sections, Grande Prairie to Dawson Creek, and west of Peace River town are light, especially in the case of incoming freight on the latter line. There is a very high density of incoming freight to Roma, although most of it is

---

[1] It would have been preferable at this point, to include the commodity flows on the P.G.E. lines into Dawson Creek and Fort St. John. However, this information was not available from the P.G.E. The flows which are indicated for this line on the individual maps have been put together from the information provided by the N.A.R., on trans-shipments to and from the P.G.E. at Dawson Creek. It must therefore be realised that these particular shipments may not have all originated or terminated at Dawson Creek itself.

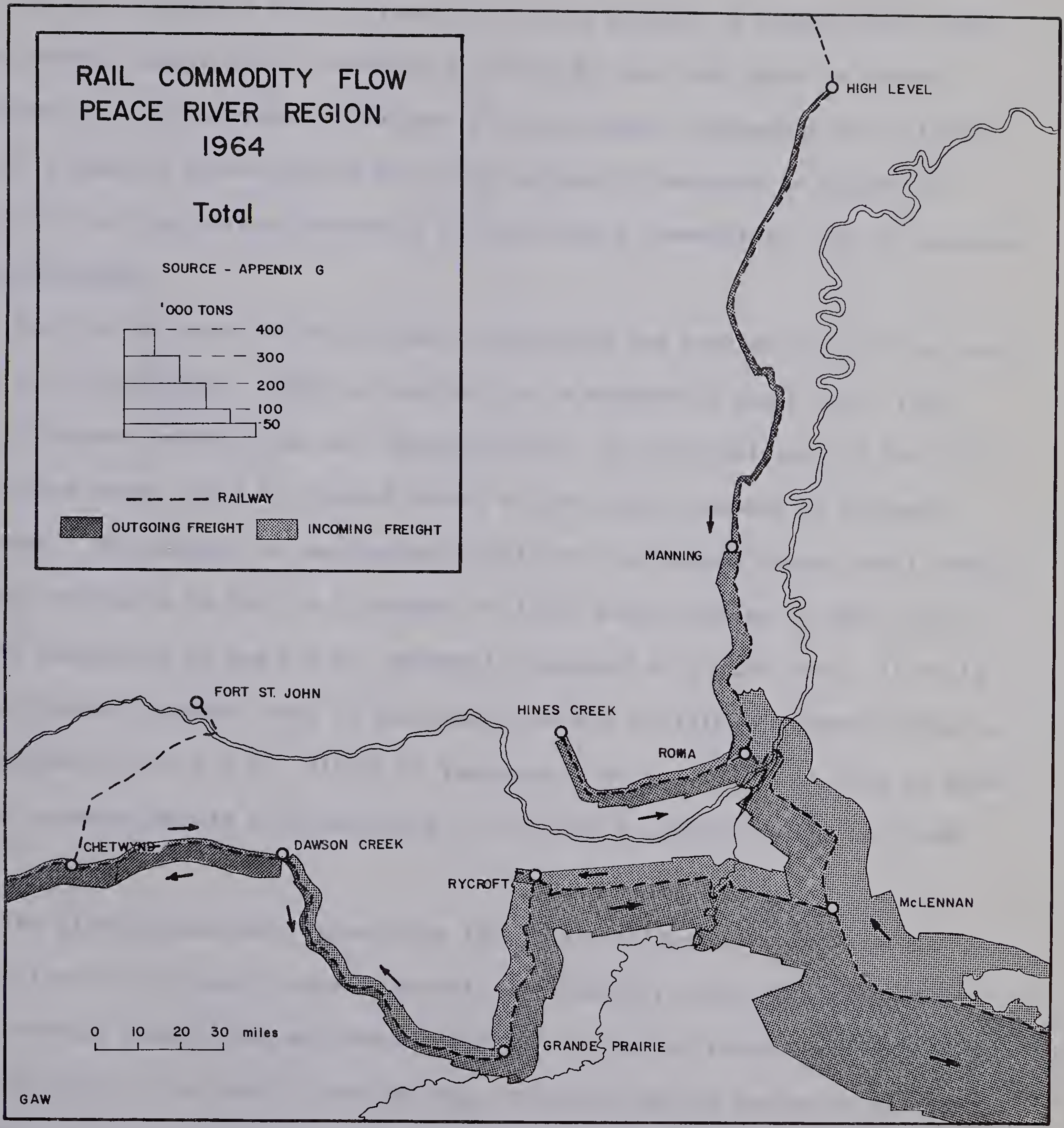

RAIL COMMODITY FLOW
PEACE RIVER REGION
1964
Total
SOURCE - APPENDIX G
'000 TONS
400
300
200
100
50
RAILWAY
OUTGOING FREIGHT
INCOMING FREIGHT
HIGH LEVEL
MANNING
FORT ST. JOHN
HINES CREEK
ROMA
CHETWYND
DAWSON CREEK
RYCROFT
McLENNAN
GRANDE PRAIRIE
0 10 20 30 miles
GAW

Figure 32

being transferred north on the G.S.L.R., for re-distribution, and to be used as construction material for the railway.

In the discussion that follows, this total pattern is divided into three main groups, namely grain, lumber and livestock, and each group is mapped seperately. The individual flow maps bear notations, indicating the relation of the commodity flow scale to the total pattern illustrated in Figure 32, in order that the volume importance of the various commodities, can be assessed.

Grain Shipments

The flow of grain on the railways, comprises the greater part of the total flow (see Figure 33). Comparatively little is shipped on the N.A.R., from points between Dawson Creek and Grande Prairie, as the completion of the P.G.E. meant that grain could be shipped direct to the coast, instead of through Edmonton. This change is particularly noticeable at Dawson Creek itself, where present shipments on the N.A.R. amount to 3,640 tons, whereas in 1956, prior to the completion of the P.G.E., shipments amounted to 37,120 tons. It would appear that at present, most of the grain from the vicinity of Dawson Creek is now shipped on the P.G.E., direct to Vancouver. An indication of this is given by the trans-shipments from the N.A.R. to the P.G.E., which amount to 45,480 tons.[2]

The flow pattern also illustrates that grain shipments are heavier on the N.A.R. line to the south, between Rycroft and Donnelly, than on the northern line, between Hines Creek and Peace River town. This is regardless of the fact that the flow on the latter line has been increased by the inclusion of nearly 30,000 tons trans-shipped from the G.S.L.R., at Roma.

---

[2] Economic Report on Certain Industrial and Other Factors Relating to the Economy of the Central Peace River District in Alberta, Issued by the Northern Alberta Development Council, Grande Prairie, Alberta, January, 1965, p. 44.

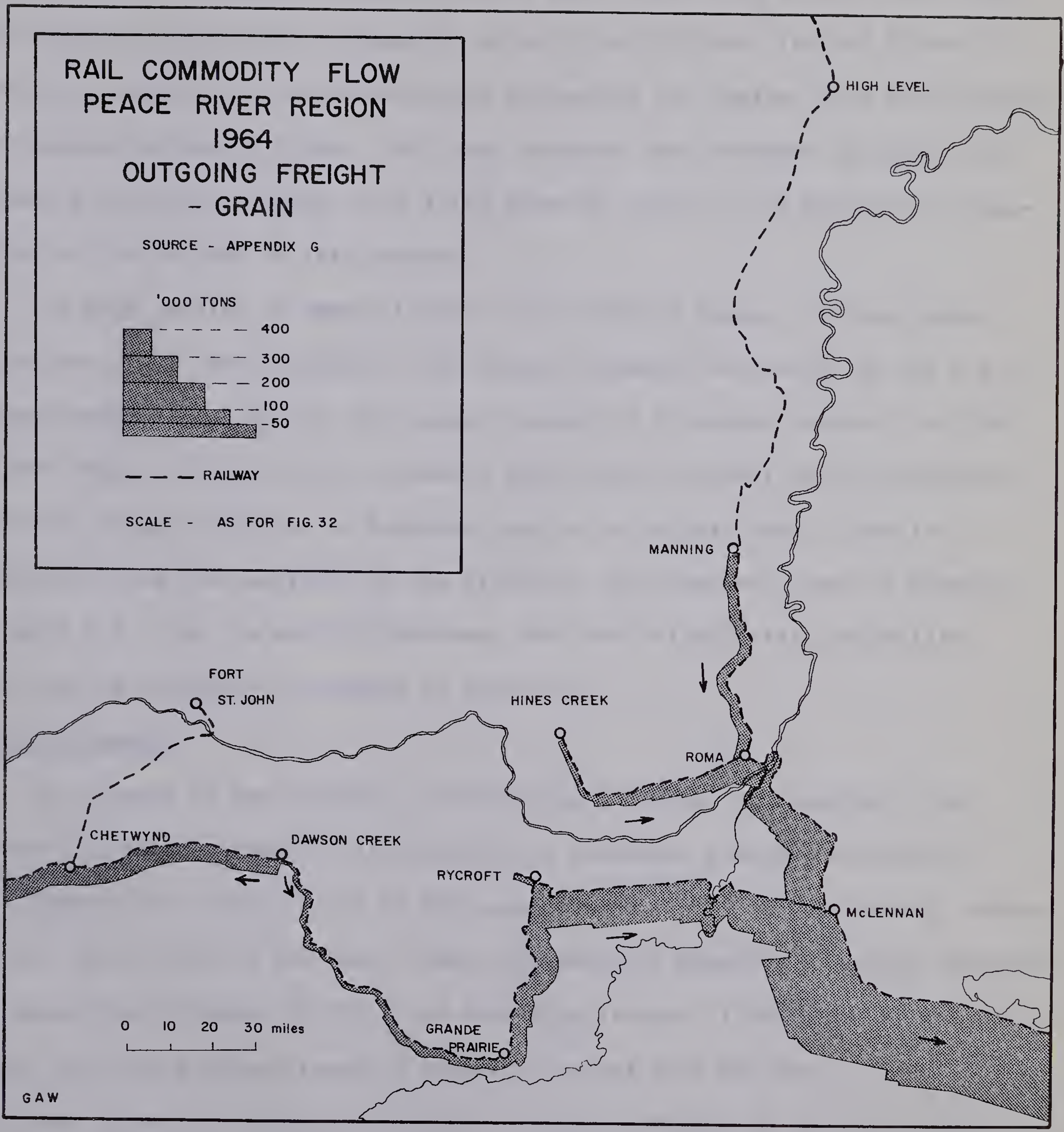

RAIL COMMODITY FLOW
PEACE RIVER REGION
1964
OUTGOING FREIGHT
- GRAIN
SOURCE - APPENDIX G
'000 TONS
400
300
200
100
50
RAILWAY
SCALE - AS FOR FIG. 32
HIGH LEVEL
MANNING
FORT
ST. JOHN
HINES CREEK
ROMA
CHETWYND
DAWSON CREEK
RYCROFT
McLENNAN
GRANDE
PRAIRIE
0 10 20 30 miles
GAW

Figure 33

Livestock Shipments

Movement of livestock comprise only a small proportion of the total goods flow, and the flow scale of Figure 34 is only one fiftieth, that of Figure 32. Livestock shipments are relatively even throughout the region, with the exception of Grimshaw and Dawson Creek. The large shipment from Grimshaw is due to the livestock which are brought in by truck from the areas to the north, and transferred to the railway at this center.

The high density at Dawson Creek, is an inferred figure, as once again, before the P.G.E. was completed, much larger shipments were moved by the N.A.R. Dawson Creek shipped by far the largest tonnage of livestock eastward in 1956 (37,000 tons). It can only be presumed from this, that most of the livestock are being shipped directly to Vancouver,and it is on this basis, that the quantities have been included on the flow map. The heaviest flow, at present on the N.A.R. line, is east of McLennan, with both High Prairie and Enilda contributing significant tonnages to the total.

Lumber Shipments

In contrast to the flow map, illustrating shipments of livestock, the pattern of lumber movements, is dominated by shipments from Grande Prairie (see Figure 35). The total of 31,800 tons, transferred from this center, amounts to over 50 per cent of the total lumber shipments to Edmonton. Smaller tonnages are moved from Grimshaw (9,175), and from High Prairie (7,050), but other than these, no other station transfers lumber in excess of 4,000 tons.

Once again, the inferred tonnages have been included on the P.G.E. line from Dawson Creek, as in 1956, 37,150 tons were shipped from this station to Edmonton.

The G.S.L.R. moved over 6,000 tons of lumber in 1964, mainly from the community of High Level, which has now a substantial lumber complex, including

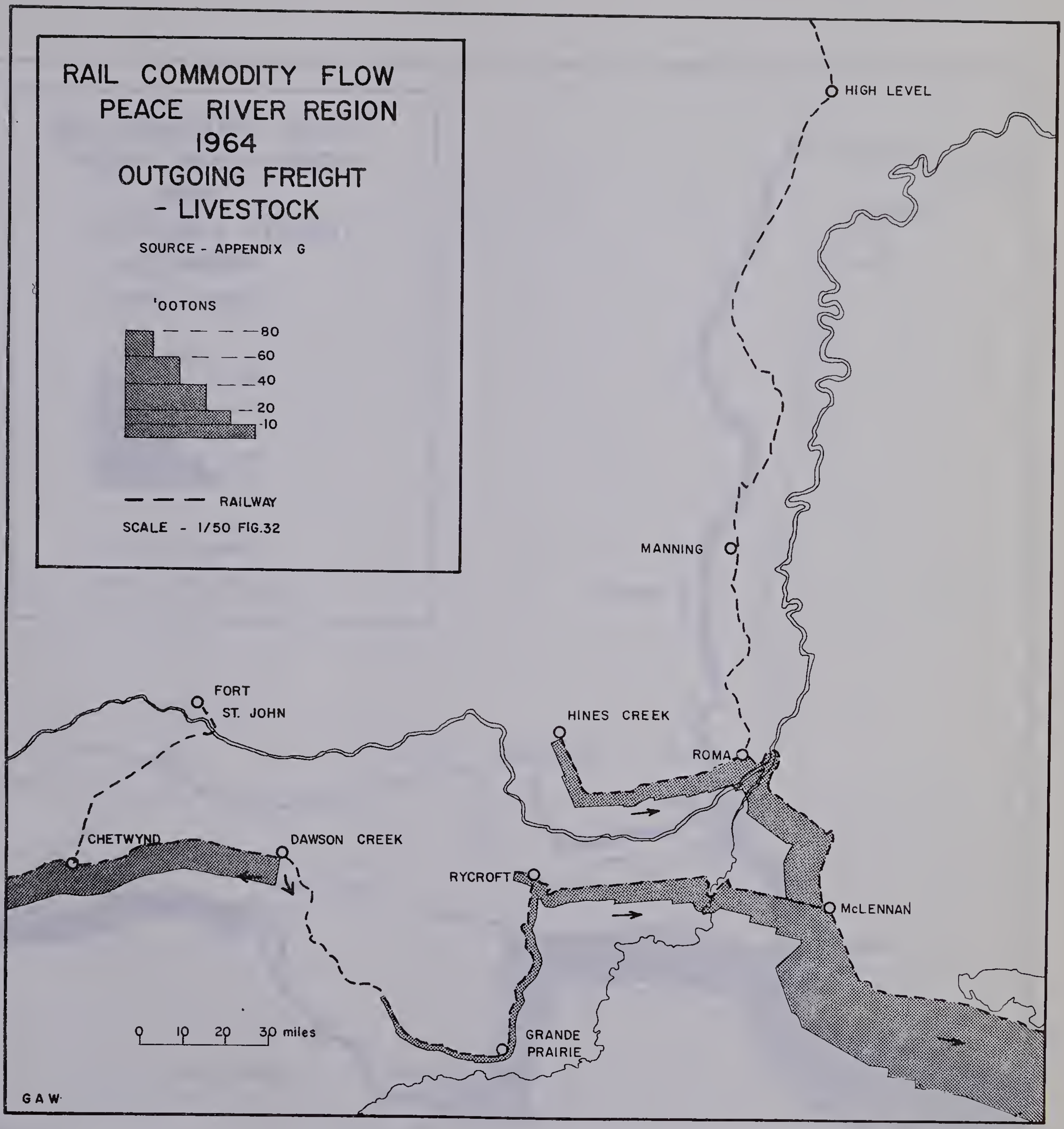

RAIL COMMODITY FLOW
PEACE RIVER REGION
1964
OUTGOING FREIGHT
- LIVESTOCK
SOURCE - APPENDIX G
'OOTONS
80
60
40
20
10
RAILWAY
SCALE - 1/50 FIG.32
HIGH LEVEL
MANNING
FORT
ST. JOHN
HINES CREEK
ROMA
CHETWYND
DAWSON CREEK
RYCROFT
McLENNAN
GRANDE
PRAIRIE
0 10 20 30 miles
GAW

Figure 34

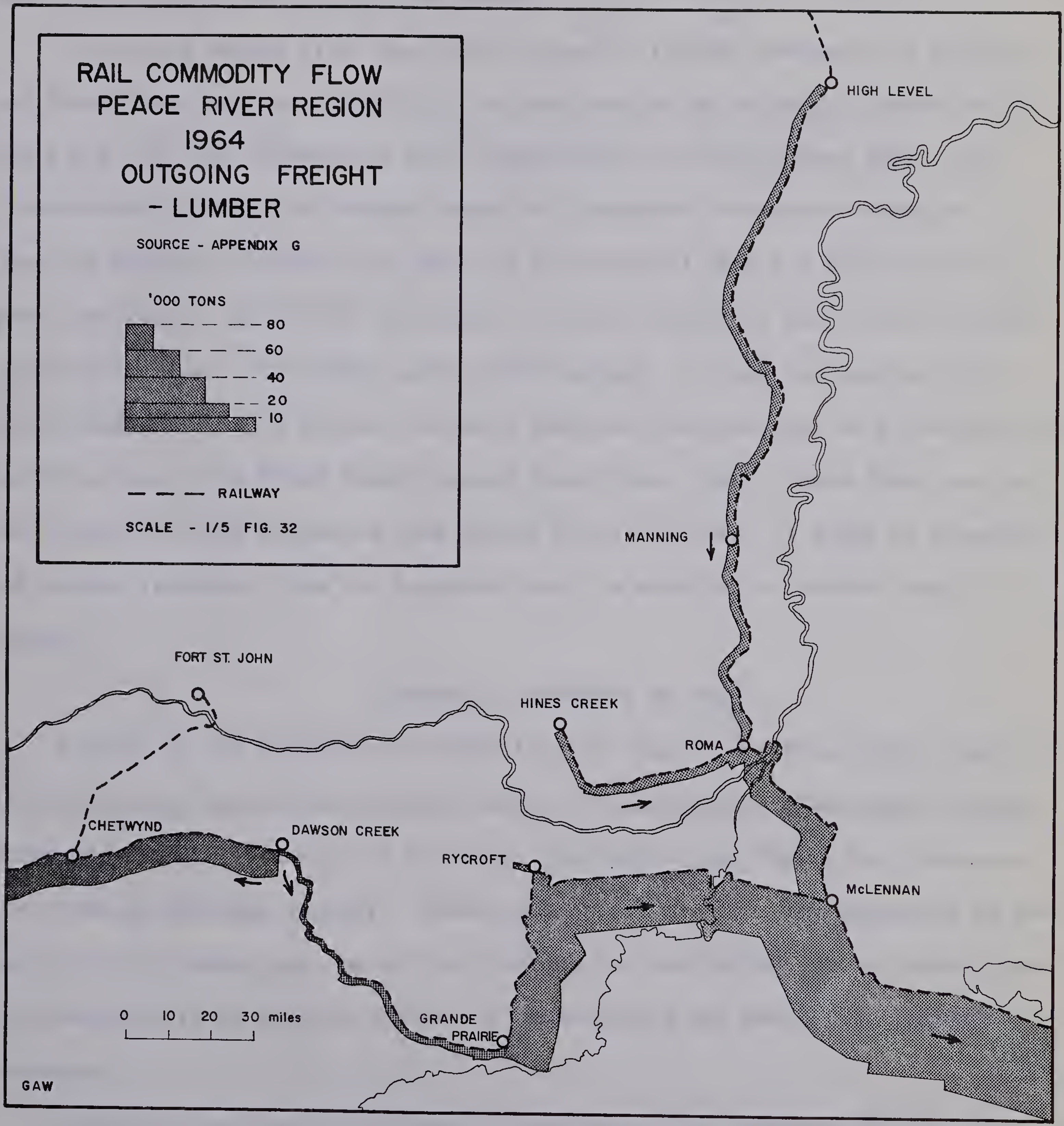

RAIL COMMODITY FLOW
PEACE RIVER REGION
1964
OUTGOING FREIGHT
- LUMBER
SOURCE - APPENDIX G
'000 TONS
80
60
40
20
10
RAILWAY
SCALE - 1/5 FIG. 32
HIGH LEVEL
MANNING
FORT ST. JOHN
HINES CREEK
ROMA
CHETWYND
DAWSON CREEK
RYCROFT
McLENNAN
GRANDE PRAIRIE
0 10 20 30 miles
GAW

Figure 35

a large planing mill. This flow has increased the main line movements from Peace River town southward, and amounts to the only other substantial movement, other than those already mentioned.

Two points emerge from this brief resumé of freight movements by rail in the Peace River region. The P.G.E. has now come to be an active competitor to the N.A.R. for the shipment of bulk commodities, and has to date taken away a considerable amount of freight which was previously carried to Edmonton. From the figures available for 1964, it is estimated that 9.7 per cent of all goods previously carried by the N.A.R., are now shipped by the P.G.E. directly to the west coast. The other point which emerges, is that the central line, from Grande Prairie to Donnelly is more important for the flow of goods than the northern line, from Hines Creek through Peace River town. These flows are not the result of large shipments from Grande Prairie itself, as might be expected, but rather shipments from the Sexsmith area, in addition to centers east of Rycroft.

COMMODITY MOVEMENTS BY ROAD

A study of the movement of commodities by road in the Peace River region, is hindered by the lack of any central source of information. The traffic counts which are taken at a number of points in the region (see Figure 24), indicate the areas of heaviest density. These statistics, however, are distorted by the addition of private cars, as well as lacking any origin/destination detail, and are consequently of limited utility in establishing any pattern of commodity movements.

Table XII, in Chapter IV gives information on the tonnages carried into the Peace River centers, by Grimshaw Trucking. This information, together with the details supplied by a number of the smaller carriers (see Table XIX), gives a general indication of the movement of goods within the area, although it is

impossible to provide precise details of individual commodity flows.

TABLE XIX - TONNAGES CARRIED BY TRUCKING COMPANIES, OPERATING IN THE PEACE RIVER REGION - 1964

Name of Carrier	Number of Centers Served	Number of Trucks	Tons Carried
Grimshaw Trucking	25	75 per week	15,000
Central Peace River Trucking	18	n.a.	n.a.
Canadian Freightways	16	n.a.	n.a.
Sanduls Transfer	14	7 per week	6,444
Bell Bros. Transport	12	4 per day	4,680
Shaw Trucking	11	n.a.	n.a.
Fairview Trucking	9	n.a.	n.a.
Falher Trucking	6	n.a.	n.a.
Gray Carriers	5	3 per day	6,000
Loiselle Transport	5	3 per day	10,560
Levines Transport	5	8 per week	4,000
Byers Transport	3	n.a.	n.a.
Spendiff Transport	3	6 per week	3,200
Berwyn Transport	3	n.a.	n.a.
Bobs Truck Service	1	n.a.	n.a.

Source: Interviews with personnel of the individual Companies.
Note: n.a. - Information not available.

Most of the freight transported by the trucks, consists of forward haul into the area, with only a small proportion of the total making up the backhaul.

Not one of the companies interviewed for the purposes of this study, specialized in hauling any specific commodity, and in some cases it was indicated that it was more economical for the trucks to return empty, than to pick up specialized merchandize, such as timber.[3]

In the absence of detailed information from all of the companies operating in the area, an examination of the number, serving each community was undertaken (Appendix 'H'). The larger centers, such as Grande Prairie and Peace River town, had a good service from many companies. However, it would have been expected that the centers not directly served by the railway, would be more reliant on road transportation, and consequently would have more truck companies serving them. As will be observed from Table XX, a pattern of this type did not emerge, and the two centers of Valleyview and Worsley will serve to illustrate this point. Valleyview, with a population of over 2,000, and situated on the main Edmonton to Grande Prairie highway, has only three licenced companies serving it. Worsley, on the other hand, situated forty miles northeast from the nearest highway, is served by four companies. Once again, it is regretable that no origin/destination statistics or tonnages are available for the trucking industry in this area, as information of this type would probably reveal that the volume of freight shipped into Valleyview, greatly exceeded that which was transported into Worsley.

---

[3] The Manager of Loiselle Transport, indicated that out of every six trucks which move out of Edmonton fully loaded, only one returns with freight. Similarly, at Bell Brothers, the trucks are mostly returned empty, as the backhaul only amounts to ten tons per week.

TABLE XX - TRUCKING COMPANIES OPERATING INTO NON RAILWAY CENTERS
PEACE RIVER REGION - 1964

Center	Population	Number of Companies Operating into Center
Bezanson	68	3
Debolt	87	3
Dunvegan	<50	1
Fort Vermilion	768	1
Grouard	303	2
Keg River	279	2
La Crete	277	1
Valleyview	2,142	3
Worsley	58	4
Calais	<50	2
Sturgeon Heights	73	2

Source: Appendix 'H'

SUMMARY

The comparative advantages of both road and rail transport are illustrated by commodity movements, although it is impossible to give more than a general idea of these movements by road. The railways are important bulk carriers of grain, lumber and livestock, while the road transport accounts for a comparatively large volume of the high value, general commodity type of merchandize.

CHAPTER VI

EVALUATION OF COMMODITY FLOW PATTERNS

There is a strong tendancy in traffic flow studies to regard the descriptive flow map as an end in itself, rather than a step in the explanation of the regional transport pattern. Given the flow patterns, established in Chapter V, the aim in this Chapter is to analyse variations in some aspects of commodity movements to and from the Peace River region, and in so doing, attempt to measure the significance of some of the commodity flows.

Apart from acting as shipping and collecting centers, it is clear that some railway towns in the Peace River, stand out above their neighbours, as centers of distribution. However, from the flow patterns, it is not possible to identify those towns shipping greater tonnages of goods than the average, and it is to the solution of this problem, that the present discussion will be devoted. It is not suggested that the relationships chosen for this analysis, are the only ones which can be used in this region, as alternative variables could have been chosen. The comparisons which have been used, are therefore a test of procedure, rather than a complete analysis.

Outward Tons by Rail

In order to establish an average relationship from which rail shipments from station centers diverge positively or negatively, outward tonnages must be compared with some yardstick. When the raw data from the destination statistics was plotted (see Figure 32), the population of the centers themselves was introduced as a distorting variable, as theoretically it would be expected that small centers with small hinterlands (in terms of both area and population), would send out proportionately smaller quantities of goods than large centers with

larger hinterlands. To eliminate this distortion, the effect of population upon shipments must be taken out, and to do this, the population of all centers shipping goods to Edmonton have been correlated with the respective shipments, and a regression line plotted (see Figure 36).[1] In other words the population of the shipping center will provide a measuring rod, which can be used to establish an average relationship between goods shipped and population, so that the volume of outward tons sent out from any center, can be interpreted in the light of this average. Other measuring rods that could have been used to establish an average are road access, farm income, and improved acreage.

The general direct relationship between the logarithm[2] of outward tons from Peace River station centers in 1964, and the logarithm of population of these shipping towns, shows that the scatter of points exhibits a general linear trend. The least squates line of best fit[3] for this data, defines the average relationship between outward tons from the shipping stations, and the population of these stations, and deviations from this average relationship therefore assume additional meaning. The coefficient of correlation[4] is +0.62 (at a level of confidence

---

[1] This approach was explained by P.R.Gould and R.H.T.Smith in "Measuring the Relationships between Rail Shipments, Road Access and Road Competition in Ghana and Australia," paper read to the Transportation Section of the Association of American Geographers, at the Dallas meeting in 1960, (Abstract in A.A.A.G., Vol. 50, No. 3, September, 1960, pp. 322-323),

[2] Since neither of the variables (population and tonnage), are normally distributed, they were transformed into Logs., in order to normalize both sets.

[3] The 'least squares' method, is a statistical calculation, to obtain the regression line by calculation rather than visual insertion. The idea is to ensure that the sum of the squares of the differences of the individual observed values, from the line, is at an absolute minimum, See S.Gregory, Statistical Methods and the Geographer, London, 1963, pp. 185-190, and Appendix 'I'.

[4] The coefficient of correlation, is a statistical measure, showing the degree of correlation between two sets of data, in this case, tonnage and population. Whenever one value increases (i.e. the known population), there is a tendency for the other value to increase (i.e. the unknown tonnage), See Appendix 'I'.

of less than 0.1 per cent),[5] and the population of station towns has "explained" 38.5 per cent of the variation in outward tons to Edmonton in 1964.[6]

An estimate of outward tons to Edmonton, from each station center, was made from the equation of the line of best fit ($\text{Log } B = 2.66 + 0.43 \text{ Log } A$, where B = outward tons to Edmonton, and A = population of station towns),[7] and the absolute deviation between estimated and actual outward tons has been plotted by proportional circles on Figure 37. Large blank circles represent those centers which shipped out more tons than expected on the basis of population, while the hatched circles represent negative deviations.

With the distorting effect of population removed, those centers recording positive deviation (excess tonnages), must be considered as centers serving a population and area greater than that of the center and its immediate environs. This impression is strengthened by the fact that those centers shipping the largest excess tonnages, i.e. Spirit River, Hines Creek and around Grande Prairie, have good local road connections with farming areas which are not linked with the railway. Hines Creek, serves areas to the west, Spirit River has a large farming hinterland to the west, and Grande Prairie serves areas to the east which are not linked to a rail connection, although served by the first class highway.

---

[5] There is always the possibility that the coefficient could have occurred by chance, and the correlation has been tested by the Students 't' test. The result in this case showed that the percentage probability of this coefficient occurring by chance was 0.1 per cent, See Appendix 'I'

[6] This percentage is called the coefficient of determination, and it expresses the proportion of the variation in the dependent variable (tonnages), which has been explained by the independent variable (population). In this case 38.5 per cent of the variation in the tonnages shipped to Edmonton can be explained by the population, See J.I.Griffin, Statistics, Methods and Applications, New York, 1962, p. 243.

[7] From this regression line, it is possible to make a reasonable assessment of what the tonnages should be for any given population, within this range.

Road access is clearly related to the amount of rail shipments, additional proof being in the central Peace area, between McLennan and Rycroft, where four centers have negative deviations, in an area which is not as well served by local road connections.

There is no concentration of centers recording negative deviations, but individual towns stand out in this respect. Dawson Creek, at the end of the rail line has the largest negative deviation, and this reflects competition from the P.G.E. (compare with Figure 39 for 1956, at which time the P.G.E. had not been completed). There are also negative deviations around Peace River town, and there appears to be two explanations for this. First, there is the distorting effect of nearby centers, such as Grimshaw, which handles so much traffic from the northern area, that it overshadows Peace River town. Secondly, Peace River town is a service center, rather than a shipping center, and consequently goods will be shipped out from the adjacent centers rather than from this town. In addition, McLennan, which is largely a railway division point rather than an agricultural center, is overshadowed by centers to the west, such as Donnelly and Falher (see Figure 37).

Outward tonnages to Edmonton in 1956 (see Figures 38 and 39), have been included, because at this date, all the freight from the region was shipped through Edmonton, the P.G.E. line to Vancouver not having been completed. In marked similarity to Figure 36, there is a linear trend in the scatter of the logarithms of outward tons to Edmonton, and the logarithms of the population of shipping centers (see Figure 38). The least squares line of best fit is almost parallel to the similar line in Figure 36. The coefficient of correlation of +0.61 is significant (at a level of confidence of less than 0.1 per cent), and population of shipping centers has "explained" 37 per cent of the variation in the pattern of outward tons to Edmonton. Deviation from the

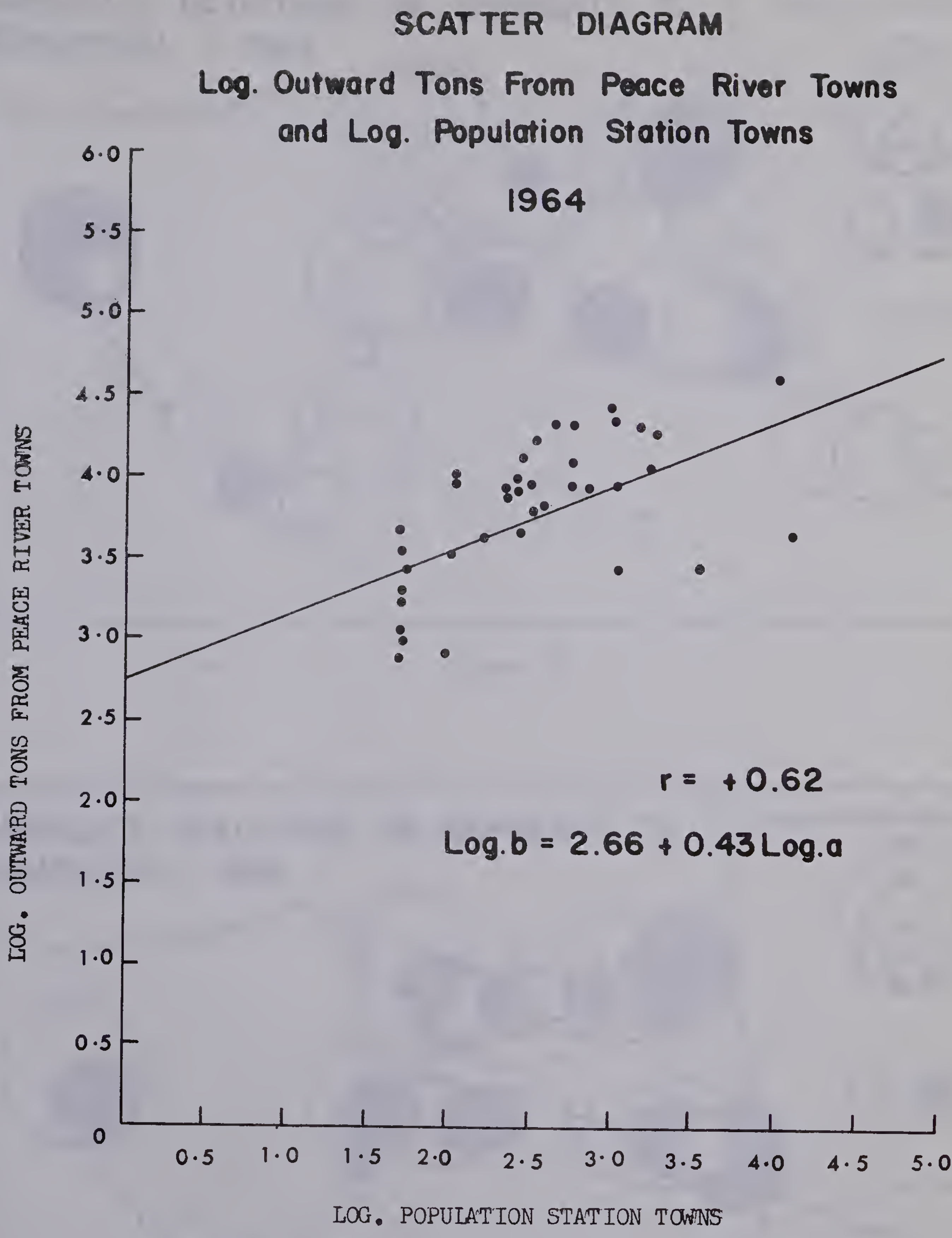


Figure 36

Source - See Text

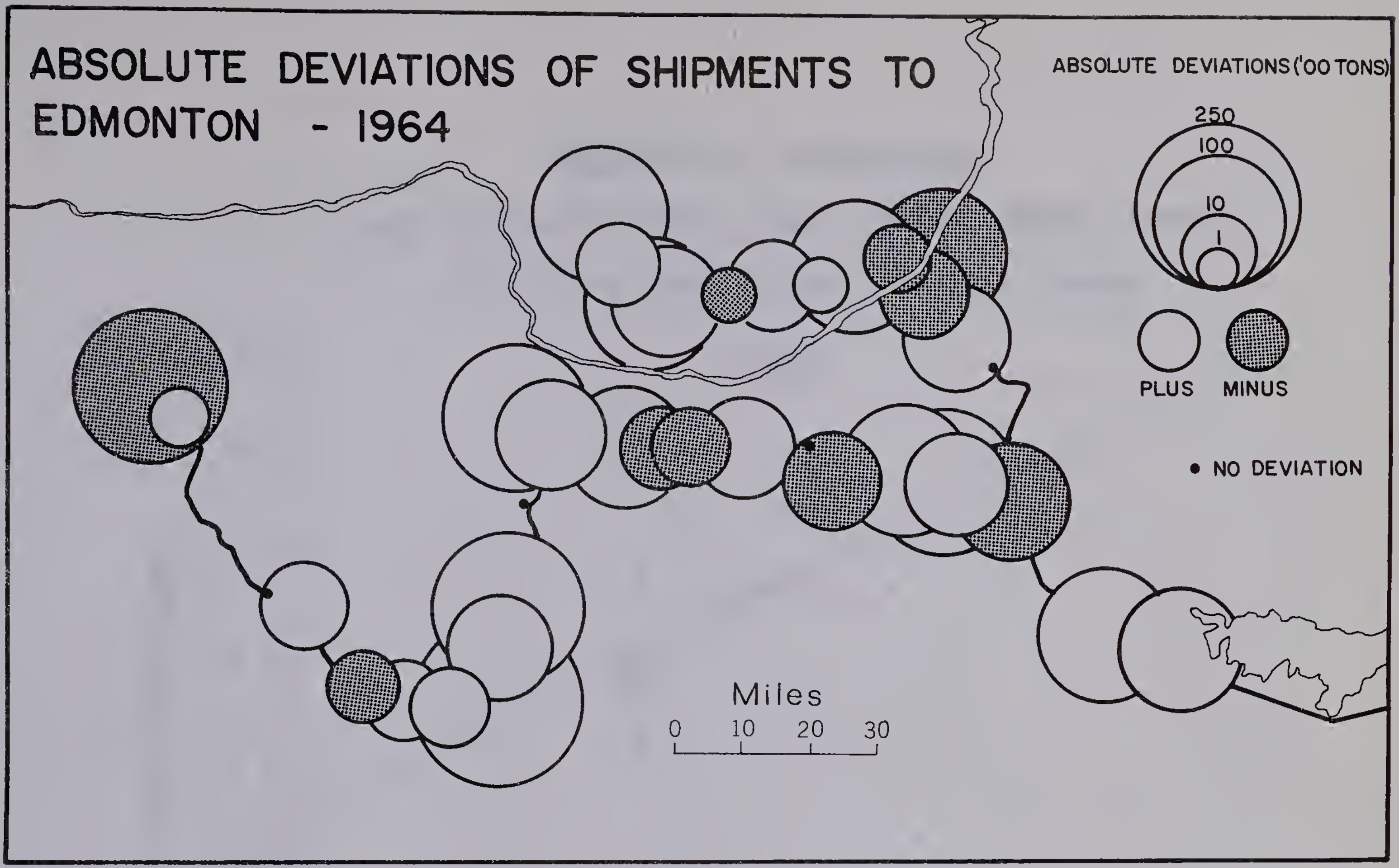

ABSOLUTE DEVIATIONS OF SHIPMENTS TO EDMONTON - 1964
ABSOLUTE DEVIATIONS ('00 TONS)
250
100
10
1
PLUS
MINUS
● NO DEVIATION
Miles
0
10
20
30

Figure 37

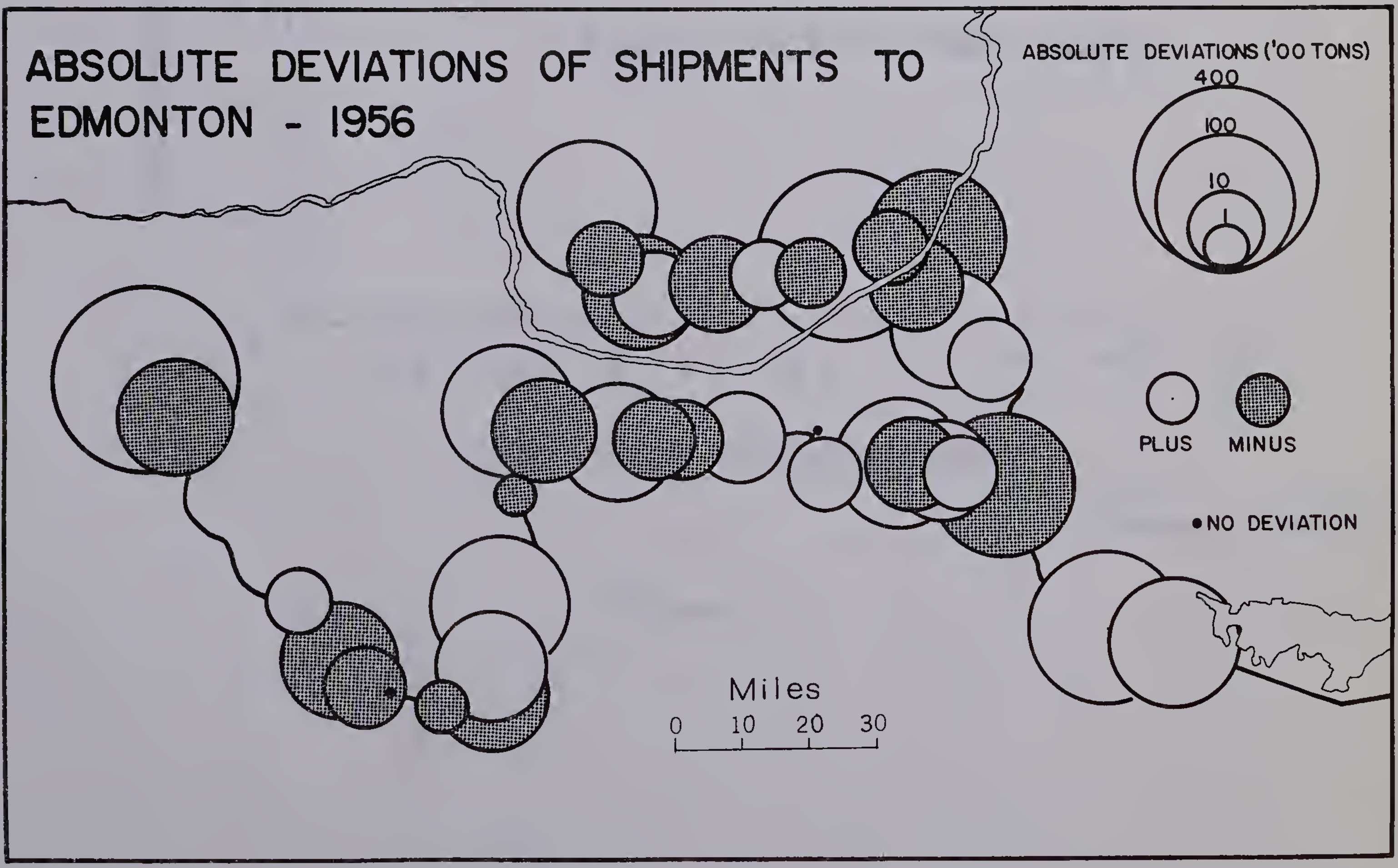
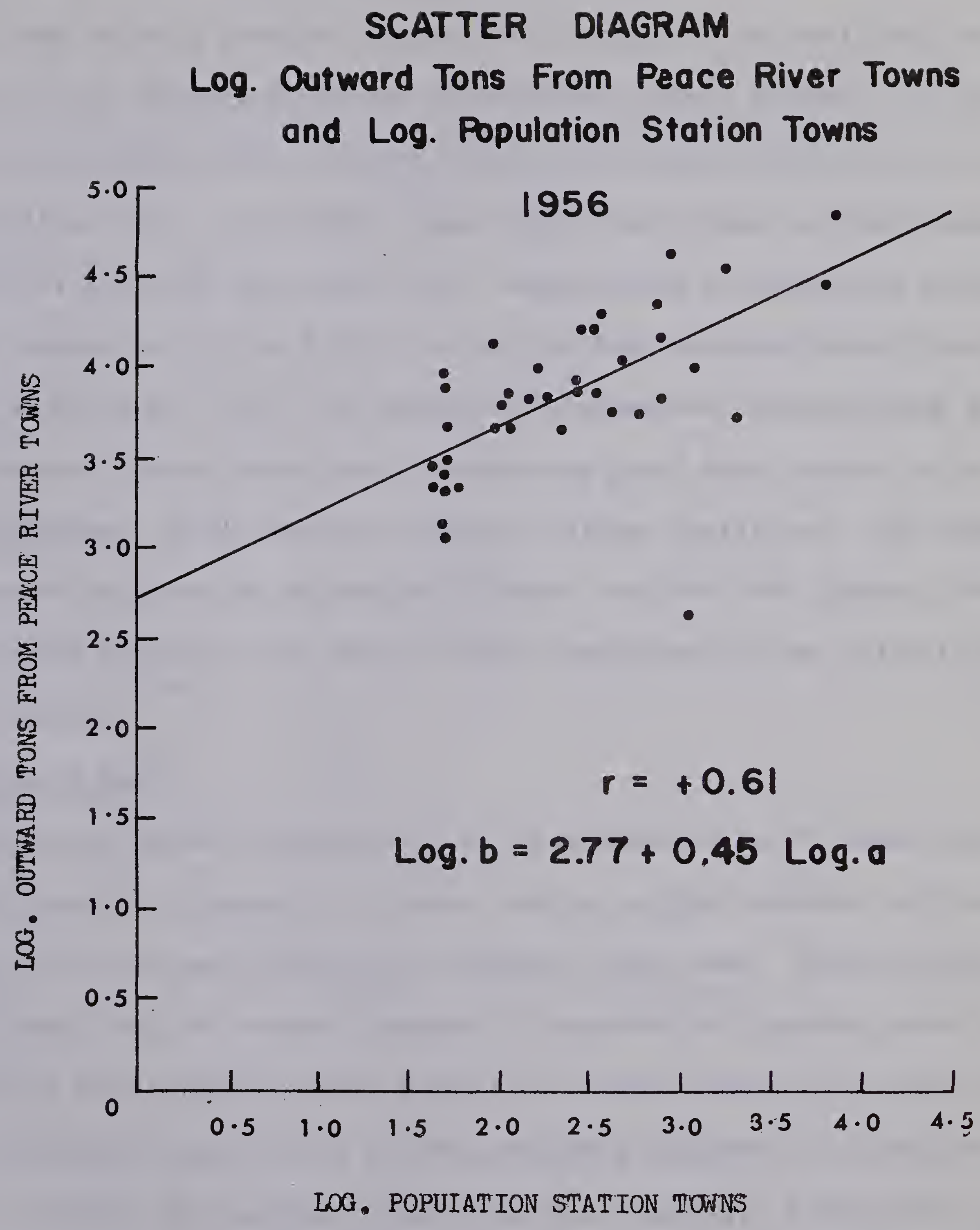

ABSOLUTE DEVIATIONS OF SHIPMENTS TO EDMONTON - 1956
ABSOLUTE DEVIATIONS ('00 TONS)
400
100
10
1
PLUS
MINUS
● NO DEVIATION
Miles
0
10
20
30

Figure 39



SCATTER DIAGRAM
Log. Outward Tons From Peace River Towns
and Log. Population Station Towns

1956

r = +0.61

Log. b = 2.77 + 0.45 Log. a

Source - See Text

Figure 38

regression line have been plotted on Figure 39, using the same proportional circle scale as that on Figure 37, so that relative changes will be obvious.

The most striking contrast between the two maps is the fact that for 1956, the positive and negative deviation are much more evenly divided, and individual centers such as Dawson Creek, Grande Prairie and Hines Creek, stand out far more on the positive side. As in 1964, these three centers were serving larger areas than would be expected from their size. Dawson Creek is especially prominent, as before completion of the P.G.E., it was the main shipping center from British Columbia on the N.A.R. line. In addition, Grimshaw was trans-shipping grain and lumber from the trucks, which were transporting goods from centers on the Mackenzie highway, which were not served by railway facilities. The negative deviations do not show any appreciable changes from the 1964 figures, with the exception that there were far more of them overshadowed by the adjoining larger shipping centers.

Inward Tons by Rail

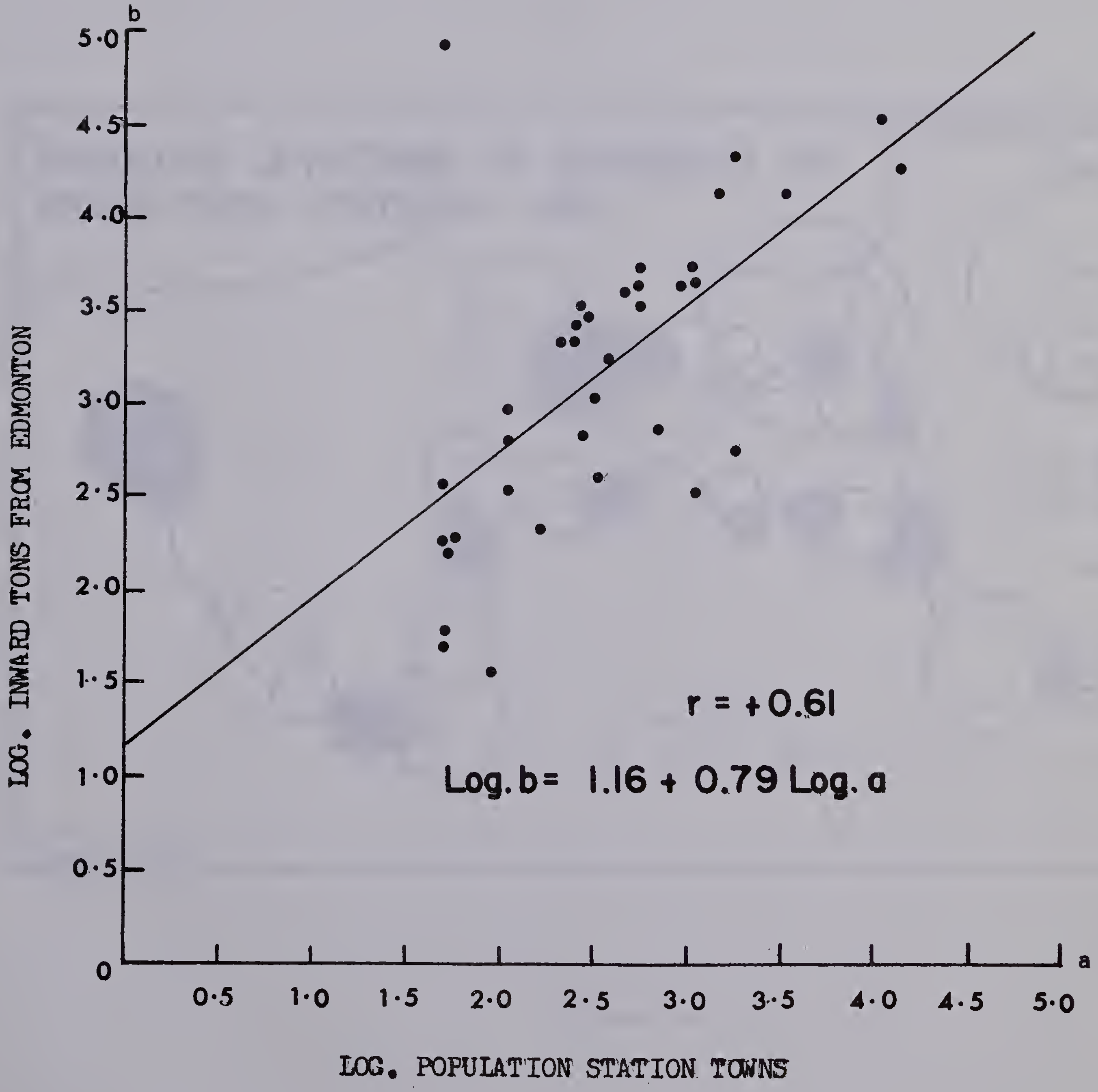
Analysis of inward shipments by rail from Edmonton to the Peace River receiving centers is pursued in a manner similar to that employed with outgoing shipments, with the same quantitive techniques being used. Theoretically, it is to be expected that the scatter diagram of logarithms of incoming tons from Edmonton and the logarithm of the population of receiving centers would show a closer correlation than that in the two preceding diagrams, as population is a stronger indicator of incoming commodities than outgoing. However, the coefficient of correlation is only +0.61,[8] with population of receiving centers "explaining" 37 per cent of the variation in the pattern. Since average inward tonnages are smaller than outward tonnages the deviations from the regression line show

---

[8] At a level of confidence of less than 0.1 per cent.

SCATTER DIAGRAM

Log. Inward Tons From Edmonton
and Log. Population Station Towns, Peace River
1964



Source - See Text

Figure 40

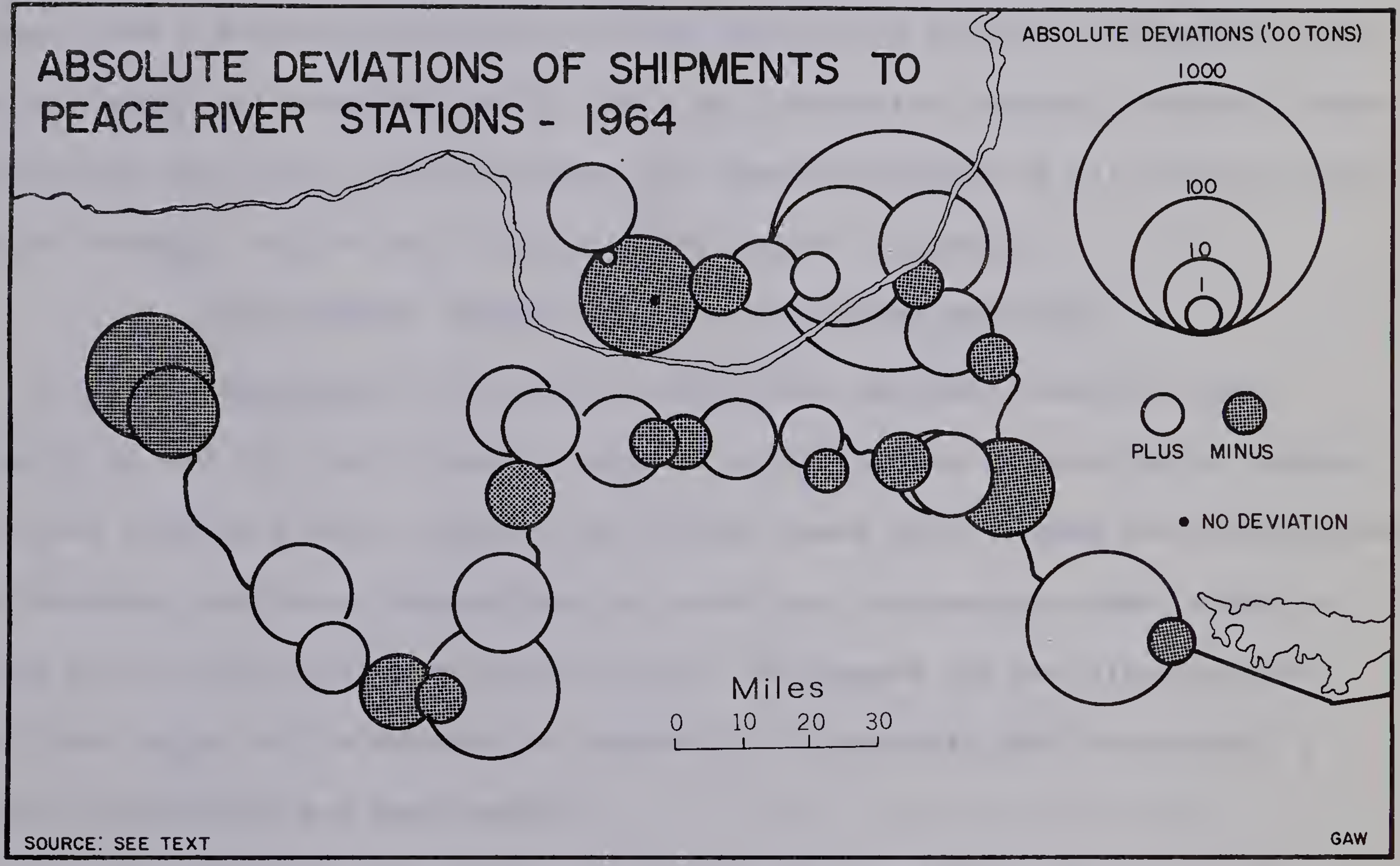

ABSOLUTE DEVIATIONS OF SHIPMENTS TO PEACE RIVER STATIONS - 1964
ABSOLUTE DEVIATIONS ('00 TONS)
1000
100
10
1
PLUS
MINUS
NO DEVIATION
Miles
0
10
20
30
SOURCE: SEE TEXT
GAW

Figure 41

that with a few exceptions, the deviations are not as large, either positively or negatively, as those shown for outward shipments.

The most notable exception is the community of Roma, which receives tonnages far in excess of what would be expected from its population. This can be explained by the fact that in 1964, shipments to this center comprised of equipment and machinery for the construction of the G.S.L.R. Other centers which stand out, are High Prairie and Grande Prairie. These two centers, however, should show a positive deviation, as they are service centers, and receive commodities which are trans-shipped by truck to the smaller adjacent centers. Other than these exceptions, the deviations for inward shipments by rail are far closer to the average, than those illustrated for outward shipments.

RELATIONSHIP BETWEEN ROAD AND POPULATION DENSITIES

A visual comparison of the maps on population and road densities (see Figures 31 and 26), would seem to indicate a high degree of correlation between the two; both have dense areas in the central Peace area, around Peace River town to Fairview, and around Grande Prairie; both have low density areas, north of Peace River town,and west of Spirit River. To compare the two distributions more precisely, and to measure the degree of relationship more accurately, a linear correlation has been made.[9]

Road densities were calculated for all the Municipal and Improvement Districts,[10] and both the road and population densities transformed to logarithms, in order to normalise both sets of data. Calculation of the regression line gave

---

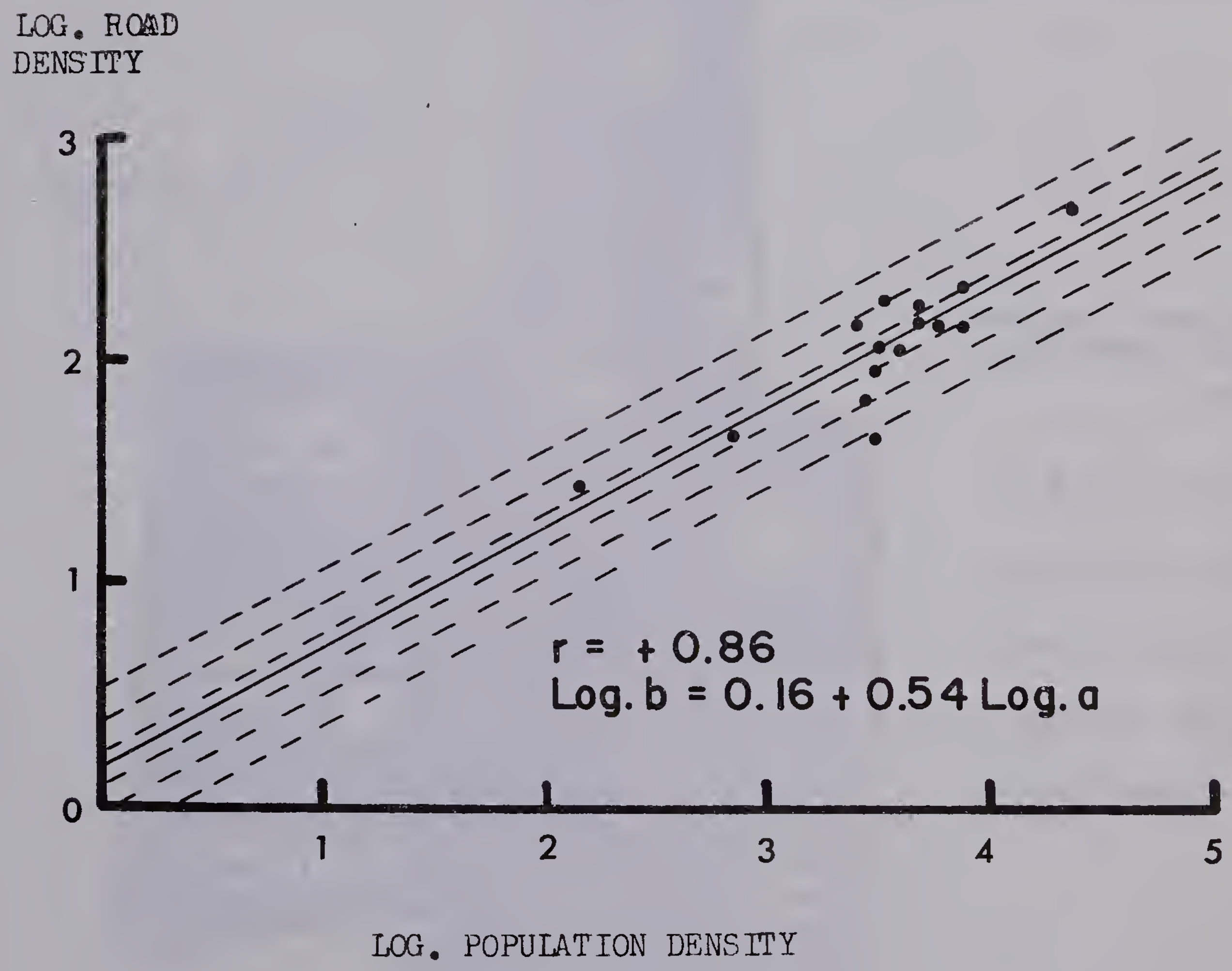
[9] Similar to the ones made between commodity flow by rail and population of station towns.

[10] Road densities being calculated on the total mileage of all weather roads, within each district, as categorised on the 1" = 4 miles maps, published by the Department of Lands and Forests in Alberta, Edmonton, various dates.

SCATTER DIAGRAM

Population and Road Densities - Peace River

1964



Source - See Text

Figure 42

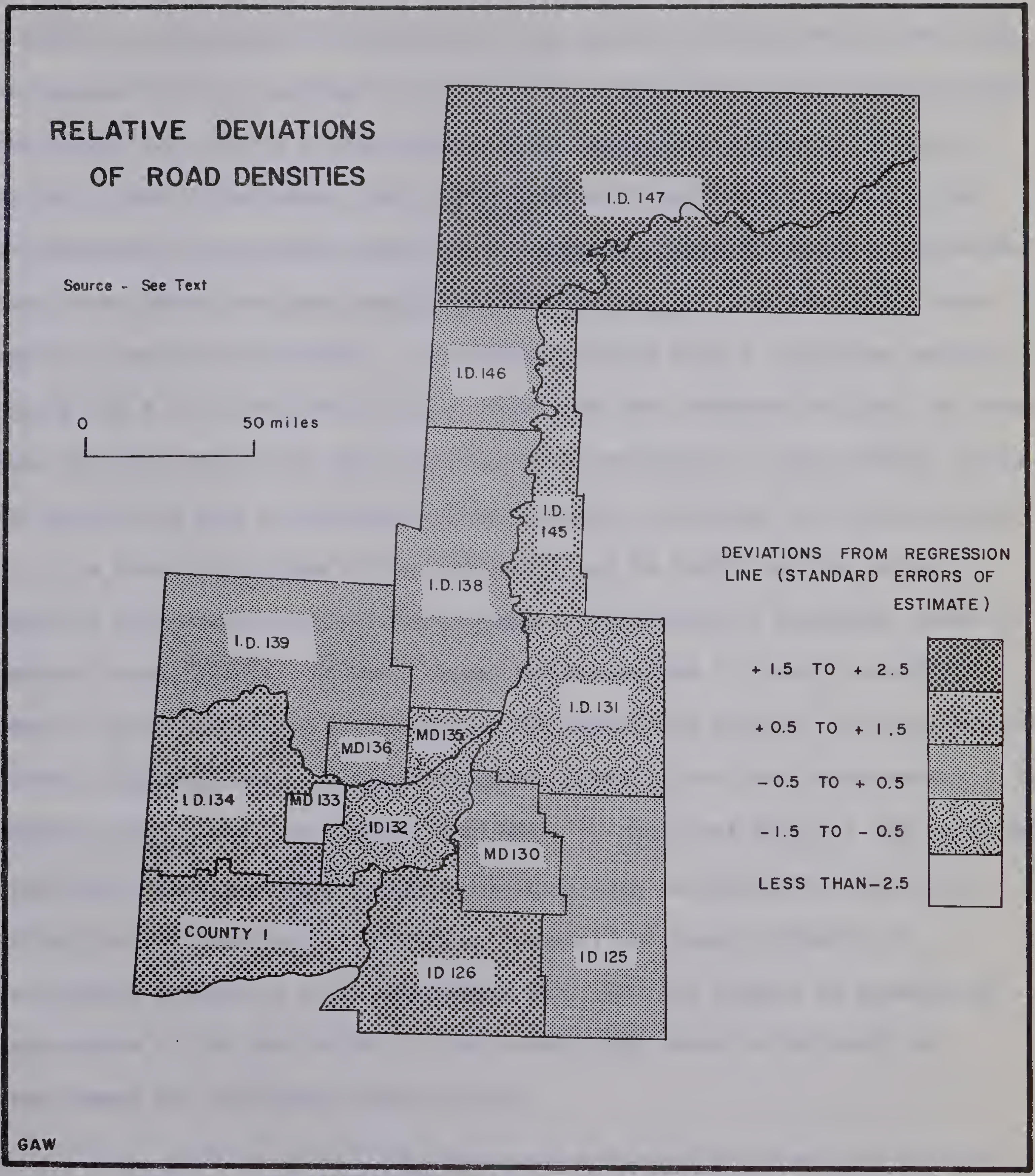

RELATIVE DEVIATIONS OF ROAD DENSITIES
Source - See Text
0
50 miles
I.D. 147
I.D. 146
I.D. 145
I.D. 138
I.D. 139
I.D. 131
MD 136
MD 135
I.D. 134
MD 133
ID 132
MD 130
COUNTY 1
ID 126
ID 125
DEVIATIONS FROM REGRESSION LINE (STANDARD ERRORS OF ESTIMATE)
+ 1.5 TO + 2.5
+ 0.5 TO + 1.5
- 0.5 TO + 0.5
- 1.5 TO - 0.5
LESS THAN - 2.5
GAW

Figure 43

the equation $\text{Log } B \quad 0.16 + 0.54 \text{ Log } A$ (where $A =$ Log population density, and $B =$ Log road mileage density), with a coefficient of correlation, $r = +0.86$, so that the coefficient of determination was equal to 74 per cent of the total. The standard error of estimate is 0.12.[11] The regression line was then plotted (see Figure 42), and on either side parallel bands were drawn, equal first to one half, then to one whole, the standard error of estimate. Deviation from the regression line plotted within these categories (see Figure 43), illustrate those areas which have road densities larger or smaller than one would expect from the average relationship. It should be noted that a regression equation showing Log B as a function of Log A could have been computed and that the deviations from the regression line would have been minimized if lags between population growth and road construction could have been introduced into the analysis.

In a sense, the areas of high deviation may be looked upon as areas of temporary road saturation, while the areas of low deviation represent areas of temporary road deficit. However, there are exceptions to this. Improvement District 147 for example, is an area of low population density, traversed by the Mackenzie highway, which is not a necessary guide to the road requirements of the immediate area. The area of high road deficit, Municipal District 133, although supporting a high population density, is deficient in local road facilities, feeding the main highways. This area, however, has large shipments of agricultural produce by rail (see Figure 29), and rail traffic is meeting the requirements of the population, to the extent that there is obviously no great demand for additional feeder roads.

---

[11] This is a statistical method with which to find the range within which accurate conditions are likely to fall See Appendix 'J'.

SUMMARY

Rail commodity flow patterns, such as those discussed in Chapter V, assume additional meaning when they have been related to the relevant population of the shipping center. The observation of the shipments and receipts of a center, to and from a constant source, Edmonton, in comparison with an average scale, indicates whether the center is receiving more or less than would be expected on the basis of the population of the center. From this, the centers with high and low deviations can be explained and measured.

CHAPTER VII

SUMMARY AND CONCLUSIONS

The objective in this study has been to present transportation as one element of the economic development in the Peace River region. The emphasis has been upon the development of transportation, from the early fur trading days up to the present. This development has been examined in a number of stages, each closely linked with the economy of the region, at that particular time. It is not suggested, however, that these stages are unique to this particular region, but they have been seperately recognized,to illustrate how useful such recognition can be, in comparative studies of transportation development in any region.

1. The initial stage of transportation development was based almost entirely upon the use of the natural waterways, and was associated with the fur trading economy. The initial establishment of the posts on the Peace River was in part due to exploration, and in part the result of close competition between the two major trading companies. With the amalgamation of the two companies, the importance of some of these posts declined, and the major function of those remaining,was to supply food and provisions to the fur trading brigades, travelling north to the Mackenzie River and west to the Pacific coast.

2. The second stage in the development of transportation, was associated with an economy which had changed from fur trading to agriculture. With the general movement of settlers into western Canada, aided by the expansion of the railways, many farmers moved into the Peace River region, partly for cheap land, and usually with the expectation that growth would be rapid and

railways would be built. The trails into the Peace, which had been cut through in the late nineteenth century, proved inadequate for the farmers. The construction of the railways into the region, however, enabled the settlers to transport their agricultural produce to outside markets. This second stage is also marked by the construction of the first roads in the region, which filled the important role of linking the outlying farming areas to the main rail lines.

3. The third stage of transportation development has been associated with an expanding economy no longer wholly dependent on agriculture, and the rapid growth of road transportation in competition with the railway. The railways no longer held a monopoly on the transportation of commodities, although they still hauled the majority of the bulky commodities with a low value per ton, such as grain, lumber and livestock. Road transport companies made inroads in the commodities transported into the region, and with the improved highway and local road facilities, had far more flexible operations than the railways.

Analysis of rail commodity movements on a statistical basis, has illustrated the variations in the level of outward and inward tonnage shipments,from and to a railway center. Rail shipments vary directly with population,and use of an estimating (regression) equation permits the identification of those centers shipping more or fewer tons than expected on the basis of population. As the population had been statistically "controlled," the variations must be due to other factors, most important amongst which are, competition from the P.G.E. railway. in addition to the improved access provided by the expanding road network.

Throughout the discussion of these stages of transportation development, several other points have been revealed. In each stage the Peace River region

has had a different outlet for the flow of its trade goods. During the years of fur trading activity, the major outlet was to the east, through either the Hudson Bay or the St. Lawrence River. With the development of early trails, and later, with the construction of the railway from Edmonton, the older water routes to the east were abandoned, and all the incoming supplies and outgoing products were shipped through Edmonton. In the final stage, an increasing amount of commodities were being shipped directly to the Pacific coast, as a result of the new highway and rail connections.

The second point which has emerged, is in connection with transport competition. During the fur trading era, competition was not between the different types of transport media, but rather it was between the different routes, which the two companies used. The Hudson's Bay Company had a distinct advantage over the rival Northwest Company, as their main point of entry on Hudson Bay was closer to the western trading posts, than the Northwest Company forts on the St Lawrence and Great Lakes. With the extension of the railway into the Peace River region, many of the water routes were abandoned, and the railway company held a virtual monopoly on goods transported into and out of the region. With the construction of modern highways, however, competition for certain commodities took the place of a railway monopoly, and the road transport operators have taken over much of the high unit value merchandize transported into this region. It can only be concluded, from the fact that competition does take place between road and rail operators, that there is not much to choose between them in rate structures for certain commodities. They are both comparatively high cost types of transport.
In the future, should other alternative types of transport become available, such as solids pipelining, they may prove to be especially beneficial to the Peace River region.

Finally, it can be suggested, that up to the present time, the Peace River region has played a relatively minor role in the economy of western Canada, and consequently has been relatively poorly supplied with transportation facilities. Growth and development patterns, however, both within and to the north of the area, appear to indicate an increased relative role for the region in the western Canadian economy of the future. Improved transportation facilities should result in the region losing much of its isolation, and becoming more integrated into the wider economy of western Canada.

BIBLIOGRAPHY

Alberta, Department of Agriculture, Annual Reports, 1930 - 1964, Edmonton, various years.

_______, Department of Highways, Annual Reports, 1951 - 1964, Edmonton, various years.

_______, Department of Highways, Official Road Maps, Years 1924, 1932, 1941, 1948, 1951, 1961, 1965, Edmonton, various years.

_______, Department of Lands and Forests, Annual Reports, 1964 and 1965, Edmonton, 1964 and 1965.

_______, Department of Municipal Affairs, Annual Reports, 1955 - 1964, Edmonton, various years.

_______, Department of Public Works, Annual Reports, 1906 - 1948, Edmonton, various years.

Alberta Motor Transport Association, Alberta Shippers Guide, Edmonton and Calgary, June 1965, 222pp.

Alberta Soil Survey, Soil Zones of Alberta, Arranged and drawn by W.Odynsky, Research Council of Alberta, Edmonton, 1962.

Alcock, F.J., "Past and Present Trade Routes to the Canadian Northwest," Geographical Review, Vol. 10, No. 2, pp. 57-83.

Appleton, J.H., A Morphological Approach to the Geography of Transport, University of Hull Occasional Papers in Geography, No. 3, 1965, 44 pp.

Armstrong, H.D., The P.G.E. Story, a Railways Dynamic Growth, Mimeographed Information Pamphlet, Pacific Great Eastern Railway, Vancouver, 1965, 9 pp.

Bank of Nova Scotia, "The Peace River Country," Bank of Nova Scotia Monthly Review, October, 1958, Toronto, 6 pp.

Beckmann, M. and McGuire, G.B., Studies in the Economics of Transportation, Yale University Press, New Haven, 1956, 232 pp.

Berry, B.J.L., "Recent Studies Concerning the Role of Transportation in the Space Economy," A.A.A.G., Vol. 49, pp. 328-42.

Bezanson, A.M., Sodbusters Invade the Peace, Ryerson Press, Toronto, 1954, 209 pp.

Boughner, C.C., Longley, R.W. and Thomas, M.K., Climatic Summaries for Selected Meteorological Stations in Canada, Vol. 3, Frost Data, Canada, Department of Transport, Meteorological Division, Toronto, 1956, 94 pp.

Bowes, G.E. (ed.), Peace River Chronicles, Prescott Publishing, Victoria, British Columbia, 1963, 557 pp.

Bowman, I., The Pioneer Fringe, American Geographical Society, Special Publication, No. 13, New York, 1931, 361 pp.

British Columbia, Minister of Highways, Annual Reports, 1957 - 1964, Victoria, British Columbia, various years.

________________, Minister of Public Works, Annual Reports, 1948 - 1956, Victoria, British Columbia, various years.

________________, Department of Lands, Forests and Water Resources, The Peace River Bulletin Area, No. 10, Victoria, British Columbia, 1963, 64 pp.

Burton, I., "The Quantitive Revolution and Theoretical Geography," Canadian Geographer, Vol. VIII, No. 4, 1963, pp. 151-62.

Campbell, G.D., An Analysis of Highway Finance and Road Users Imposts in Canada, Unpublished Ph.D. thesis, Purdue University, June 1956, 295 pp.

Canada, Department of Agriculture, Climate of the Upper Peace River Region, Publication No. 1224, Ottawa, 1965, 18 pp.

______, Department of Agriculture, Predominant Types of Commercial Farms in Canada, 1961, (Map), Prepared by the Economics Branch, Ottawa, 1961.

______, Department of Transport, Meteorological Branch, Precipitation Normals for Alberta, based on Period, 1931-1960, Climatology Division, Toronto, May, 1965.

______, Department of Transport, Meteorological Branch, Temperature Normals for Alberta, based on Period 1931-1960, Climatology Division, Toronto, December, 1964.

______, Dominion Bureau of Statistics, Census of Canada, 1911, 1921, 1931, 1941, 1951, 1956, 1961, Ottawa, various years.

______, Dominion Bureau of Statistics, Census of Prairie Provinces, 1906, 1916, 1926, 1936, 1946, Ottawa, various years.

______, Dominion Bureau of Statistics, Year Book, 1927-1964, Ottawa, various years.

______, Report on Various Proposed Railway Routes for a Western Outlet to the Pacific from the Peace River District, Joint Board of Engineers of the Canadian National and the Canadian Pacific Railways, Ottawa, 1929, 32 pp.

Canada, *Report of the Royal Commission on the Development of Northern Alberta*, Edmonton, March, 1958, 115 pp.

______, *Report of the Royal Commission on the Great Slave Lake Railway*, 2 Vols., Edmonton, June, 1960, 197 pp.

______, *Report of the Royal Commission to Inquire into Railways and Transportation in Canada*, 1931-32, Ottawa, 1932.

______, *Report of the Royal Commission on Transportation*, 1951, Ottawa, 1951, 307 pp.

______, *Report of the Royal Commission on Transportation*, 3 Vols., March and December, 1961, and July, 1962, Ottawa, 93, 289 and 620 pp.

______, *Crows Nest Pass Rates on Grain and Grain Products, 1950*, Joint Submission of the Government of the Province of Saskatchewan, the Government of the Province of Manitoba and the Government of the Province of Alberta, to the Royal Commission on Transportation, 1951, Ottawa, 1951.

______, *Sessional Papers of the Dominion of Canada*, Vol. 56, No. 1, Ottawa, 1920.

Canadian Pacific Railway Co., *Special and Competitive, Local and Joint, Export Freight Tariff on Grain and Grain Products, from Stations in British Columbia, Alberta and Saskatchewan, to Vancouver, New Westminster and North Vancouver, British Columbia*. Pamphlet No. C.T.C., No. N. 4090. C.P.R. (1960).

______________________________, *Special and Competitive, Joint and Proportional Freight Tariff on Grain, Flaxseed and Products thereof, from Stations in Ontario, Manitoba, Saskatchewan, Alberta and British Columbia, to Fort William, Port Arthur and West Fort William, Ontario*. Pamphlet No. C.T.C., No.N. 4035. C.P.R. (1960).

Charles, J.L., "Railways March Northward," *Canadian Geographical Journal*, Vol. 62, No. 1, pp. 2-21.

Currie, A.W., *Economics of Canadian Transportation*, University of Toronto Press, Toronto, 2nd. ed., 1959, 735 pp.

Daggett, S., *Principles of Inland Transportation*, Harper, New York, 4th. ed., 1955, 788 pp.

Dawson, C., *Survey of Canada, 1879-80*, (Map).

Dawson, C.A., *The Settlement of the Peace River Country*, Vol. 6 of, *Canadian Frontiers of Settlement*, ed. by Mackintosh, W.A. and Joerg, W.L.G., 9 Vols., MacMillan Co., Toronto, 1934, 284 pp.

Dubnie, A., Transportation and the Competitive Position of Selected Canadian Minerals, Mineral Survey No. 2, Mineral Resources Division, Department of Mines and Technical Surveys, Ottawa, 1962, 140 pp.

Duncan, O.D., et al., Statistical Geography, Problems in Analysing Areal Data, Free Press, Glencoe, Illinois, 1960, 191 pp.

Durden, C.D., Some Geographic Aspects of Motor Vehicle Travel in Rural Areas - Empirical Tests of Certain Geographic Concepts of Location and Interaction, Unpublished Ph.D. thesis, University of Washington, 1955, 148 pp.

Ezekiel, M. and Fox, K.H., Methods of Correlation and Regression Analysis, Wiley, New York, 3ed. ed., 1959, 548 pp.

Fulton, M. and Hoch, L.C., "Transportation Factors Affecting Locational Decisions," Economic Geography, Vol. 35, 1959, pp. 51-59.

Garrioch, A.C., A Hatchet Mark in Duplicate, Ryerson Press, Toronto, 1929, 282 pp.

Glazebrook, G.P. de T., A History of Transportation in Canada, 2 Vols., 2nd. ed. rev., McClelland and Stewart Ltd., Toronto, 1964, 191 and 293 pp.

Gould, P.R. and Smith, R.H.T., "Measuring the Relationships Between Rail Shipments, Road Access and Road Competition in Ghana and Australia," Paper presented at the 56th. Annual Meeting of the Association of American Geographers, Dallas, Texas, April, 1960. Abstract in A.A.A.G., Vol. 50, No. 3, September, 1960, pp. 322-23.

Gregory, S., Statistical Methods and the Geographer, Longmans Green, London, 1963, 240 pp.

Griffin, J.I., Statistics, Methods and Applications, Holt, Reinhart and Winston, New York, 1962, 533 pp.

Hanson, E.J., Dynamic Decade, McClelland and Stewart, Toronto, 1958, 314 pp.

Harmon, D.W., A Journal of Voyages and Travels in the Interior of North America, Toronto, 1911, 382 pp.

Hodgson, G.W., Fluid Dynamics and Pipeline Studies at the Reseach Council of Alberta, Reseach Council of Alberta, Contribution No. 303, Prepared for the 1st. Annual Meeting of the Canadian Transportation Reseach Forum, Quebec City, September 9-10, 1965, 34 pp.

Howland, R.D., Some Regional Aspects of Canada's Economic Development, Prepared for Royal Commission on Canada's Economic Prospects, November, 1957, Ottawa, 1958, 302 pp.

Innis, H.A., The Fur Trade in Canada, University of Toronto Press, Toronto, 2nd. ed., 1956, 463 pp.

Jaffary, E., "Farming on the Peace River,100 Years Ago," Queens Quarterly, Vol. 36, 1929, pp. 482-91.

Kansky, K.,Structure of Transportation Networks; Relationships between Network Geometry and Regional Characteristics, University of Chicago, Department of Geography, Research Paper No. 84, 1963, 155 pp.

Kitto, F.H., The Peace River Country, Canada, National Development Bureau, Ottawa, 3ed. ed. rev., 1930, 115 pp.

Leppard, H.M., "The Settlement of the Peace River Country," Geographical Review, Vol. 25, 1935, pp. 62-78.

MacGregor, J.G., The Land of Twelve Foot Davis, A History of the Peace River Country, Applied Arts, Edmonton, 1952, 395 pp.

Mackintosh, W.A., Prairie Settlement, The Geographical Setting, Vol. 1 of Canadian Frontiers of Settlement, ed. by Mackintosh, W.A. and Joerg, W.L.G. (9 Vols.), MacMillan co., Toronto, 1934, 242 pp.

Meyer, J.R., et al., The Economics of Competition in the Transportation Industries, Harvard University Press, Cambridge, 1959, 359 pp.

Moroney, M.J., Facts from Figures, Penguin Books Ltd., London, 3rd. ed. rev., 1956, 472 pp.

Morton, A.S., A History of the Canadian West to 1870-71, Nelson, London, n.d., 987 pp.

___________, History of Prairie Settlement, Vol. 2 of Canadian Frontiers of Settlement, ed. by Mackintosh W.A. and Joerg, W.L.G. (9 Vols.), MacMillan Co., Toronto, 1932, 571 pp.

Moss, E.H., "The Vegetation of Alberta," The Botanical Review, Vol.21, No. 9, November, 1955, pp. 494-567.

Myles, E.L., The Emperor of the Peace River, Institute of Applied Art, Edmonton, 1965, 310 pp.

Northern Alberta Development Council, Report on Certain Industrial and Other Factors Relating to the Economy of the Central Peace River District in Alberta, Grande Prairie, Alberta, January, 1965.

____________________________, The Changing Frontier, Addresses at the Conference, Peace River, Alberta, October,5-6, 1965, 75 pp.

Northern Albertan Railway Company, The Northern Alberta Railway, Unpublished mimeographed sheet, Prepared by N.A.R., Edmonton, October,1, 1963, 5 pp.

Odynsky, W., et al., Reconnaissance Soil Survey of the Beaverlodge and Blueberry Mountain Sheets, Research Council of Alberta, Report No. 81, Edmonton, 1961, 123 pp.

Odynsky, W. and Newton, J.D., Soil Survey of the Rycroft and Watino Sheets, Research Council of Alberta, Report No. 56, Edmonton, 1950, 84 pp.

Odynsky, W., Sawyer, C.D. and Wood, V.A., Public Lands Open for Settlement in the Peace River District of Alberta, Department of Lands and Forests, and Research Council of Alberta, Edmonton, 5th. ed. rev., 1964, 39 pp.

Odynsky, W., Wynnyk, A. and Newton, J.D., Soil Survey of the Grande Prairie and Sturgeon Lake Sheets, Research Council of Alberta, Report No. 74, Edmonton, 1956, 111 pp.

______________________________, Soil Survey of the High Prairie and McLennan Sheets, Research Council of Alberta, Report No. 63, Edmonton, 1953, 112 pp.

Oliver, E.H. (ed.), The Canadian Northwest, Publication of the Canadian Archives, No. 9, Vol. 2, Ottawa, 1915, 1,348 pp.

Rhynsburger, W., "Regional Influence upon the Canadian Railway Pattern," Yearbook of the Association ot Pacific Coast Geographers, Vol. 2, 1949, pp. 27-32.

Rich, E.E., The History of the Hudson's Bay Company, 1670-1870 - Vol. 2, (1763-1870), Hudson's Bay Record Society, London, 1959, 974 pp.

Robinson, I.M., Peace River Region, in Vol. 1, Resources for Tomorrow, Conference Background Papers, 2 Vols., 1,061 pp. 1961, pp. 505-22.

Rutherford, R.L., Geology and Water Resources in Parts of the Peace River and Grande Prairie Districts, Alberta, Research Council of Alberta, Geological Survey Division, Report No. 21, Edmonton, 1930, 68 pp.

Somerset, H.S., The Land of the Muskeg, Wm. Heinemann, London, 1895, 248 pp.

Stranger, G.R., Railways Re-creation of the Transportation Monopoly, Ottawa, (1962), 52 pp.

Taaffe, E., Gould, P.R. and Morrill, E., "Transport Development in Underdeveloped Countries," Geographical Review, Vol. 53, 1963, pp. 503-29.

Thomas, B.E., "Methods and Objectives in Transportation Geography," Professional Geographer, Vol. 8, No. 4, 1956, pp. 2-5.

Vanderhill, B.G., "Trends in the Peace River Country," Canadian Geographer, Vol. 7, No. 1, 1963, pp. 33-41.

Wallace, J.N., The Wintering Partners in the Peace River, Thorburn and Abbott, Ottawa, 1929, 139 pp.

Wallace, W.S. (ed.), Documents Relating to the North West Company, The Champlain Society, Toronto, 1934, 527 pp.

Wolfe, R.I., "Transportation and Politics - The Example of Canada," A.A.A.G., Vol. 52, 1962, pp. 176-90.

__________, Transportation and Politics, D. Van Nostrand Co., Toronto, 1963, 136 pp.

Wonders, W.C., The Nature and Resources of the Peace River Area, Reprint from: Planning in Alberta Series, 1955-56, Community Planning Association of Canada, Alberta Division, Edmonton, 1956, 9 pp.

Wyatt, F.A., Preliminary Soil Survey of the Peace River - High Prairie, Sturgeon Lake Area, Research Council of Alberta, Report No. 31, Edmonton, 1935, 28 pp.

__________, and Yonge, O.R., Preliminary Soil Survey Adjacent to the Peace River, Alberta, West of Dunvegan, Research Council of Alberta, Report No. 23, Edmonton, 1930, 33 pp.

APPENDIX 'A' - COMMODITY SHIPMENTS ON N.A.R. RAILWAY, FROM PEACE RIVER STATIONS TO EDMONTON, 1932 - 1946

Station	Grain (Tons)				Livestock (Tons)				Lumber (Tons)			
	1932	1936	1941	1946	1932	1936	1941	1946	1932	1936	1941	1946
Enilda	1,560	160	1,240	2,080	216	126	486	648	-	-	-	4,775
High Prairie	5,360	480	6,000	8,320	306	666	1,181	1,350	-	223	1,325	2,025
McLennan	-	-	-	-	9	63	-	9	-	20	3,710	5,350
Donnelly	7,600	2,760	2,480	4,560	36	144	54	90	-	-	100	500
Falher	13,080	7,800	4,200	16,000	225	423	666	450	-	-	20	125
Dreau	-	1,800	1,200	1,600	-	-	-	-	-	-	-	-
Girouxville	6,080	2,220	3,680	9,440	-	18	234	216	-	-	1,000	-
Watino	480	920	640	1,000	9	27	36	45	-	10	-	-
Tangent	40	120	120	-	-	9	27	36	-	25	-	-
Eaglesham	-	280	1,200	2,560	36	18	270	180	-	-	-	-
Codesa	-	-	680	1,150	-	-	-	207	-	-	75	425
Belloy	1,760	1,520	1,800	2,440	-	-	-	36	-	-	201	-
Wanham	3,120	2,640	5,840	6,400	9	144	63	63	-	66	102	50
Prestville	1,320	1,080	1,280	920	-	-	-	45	-	-	-	-
Rycroft	9,520	4,600	6,280	9,480	90	198	135	162	-	-	850	50
Spirit River	11,840	8,160	13,880	12,160	180	423	702	576	-	25	41	25
Silverwood	-	1,120	880	400	-	-	-	9	-	21	-	50
Woking	40	-	2,320	1,640	-	-	-	99	-	442	-	400
Webster	1,400	400	1,240	560	-	-	-	-	-	309	1,291	450
Sexsmith	26,920	20,760	40,160	28,400	738	1,143	1,062	963	-	-	75	1,100
Clairmont	16,440	12,240	19,760	17,080	297	243	63	99	-	-	-	-
Grande Prairie	13,360	4,560	14,360	8,840	324	927	1,341	882	-	20	100	15,000
Dimsdale	5,120	3,720	6,160	3,600	9	27	-	72	-	-	-	-
Wembley	9,120	9,000	13,880	10,240	162	270	477	387	-	-	-	2,025
Huallen	3,400	1,760	4,480	3,640	9	45	108	288	-	-	-	-
Beaverlodge	20,120	8,120	22,520	18,160	396	729	738	846	-	-	-	225
Albright	1,680	560	1,360	640	-	-	-	-	-	-	-	-
Hythe	16,960	7,400	25,320	13,120	396	801	1,008	918	-	-	225	125
Lymburn	-	-	1,680	960	-	9	45	216	-	-	-	200
Tupper	280	-	-	-	-	36	315	306	-	-	-	1,050

continued ....

APPENDIX 'A' (continued)

	Grain (Tons)				Livestock (Tons)				Lumber (Tons)			
Station	1932	1936	1941	1946	1932	1936	1941	1946	1932	1936	1941	1946
Pouce Coupe	3,090	4,160	6,480	6,040	9	99	-	-	-	60	175	-
Dawson Creek	15,360	9,280	28,520	27,080	477	1,458	2,664	2,124	-	149	510	14,350
Reno	1,440	560	1,440	2,040	-	36	9	54	-	72	-	-
Nampa	1,880	960	2,040	3,240	9	63	-	9	-	50	-	-
Judah	800	920	280	1,040	-	-	-	-	-	-	-	-
Peace River	680	1,320	1,200	1,840	54	81	261	324	-	-	-	325
Roma	2,240	2,680	2,400	2,240	27	-	18	45	-	-	-	-
Grimshaw	11,160	14,880	15,160	29,960	198	279	783	783	-	-	475	1,525
Berwyn	11,120	9,520	5,600	7,520	333	774	306	261	-	-	-	-
Brownvale	12,000	8,880	7,360	7,120	45	117	117	198	-	-	-	-
Whitelaw	8,160	6,480	6,800	4,560	180	144	252	252	-	29	-	1,300
Bluesky	9,480	6,440	5,560	6,400	90	198	162	243	-	-	100	-
Fairview	21,680	15,560	8,320	14,360	162	432	288	459	-	-	25	450
Gage	2,200	1,960	3,360	4,240	-	27	63	153	-	-	-	-
Hines Creek	600	760	4,560	5,960	90	333	1,089	1,503	-	-	150	26,250

Source: Records of Northern Alberta Railway Company, at the Head Office in Edmonton. Collected in July,1965, by permission of Mr. Walker, Traffic Manager.

APPENDIX B - TOTAL RAIL SHIPMENTS FROM PEACE RIVER TO EDMONTON, 1932 - 1946

	Shipments			% of Total		
Year	Grain	Livestock	Lumber	Grain	Livestock	Lumber
1932	278,490	5,121	-	98.1	1.9	-
1933	149,240	4,689	-	96.3	3.7	-
1934	218,760	6,066	-	97.3	2.7	-
1935	280,000	7,623	-	97.3	2.7	-
1936	188,500	10,520	1,521	93.9	5.2	0.9
1937	294,360	12,456	668	95.7	4.0	0.3
1938	156,680	9,936	407	93.8	5.9	0.3
1939	110,600	7,029	346	93.7	5.9	0.4
1940	287,680	11,043	5,610	94.5	3.6	1.9
1941	296,480	15,023	10,550	92.0	4.6	3.4
1942	324,040	24,372	8,954	90.6	6.8	2.6
1943	126,640	30,897	8,075	76.4	18.6	5.0
1944	282,400	31,761	25,025	83.2	9.3	8.5
1945	235,760	20,925	37,275	80.2	7.1	12.7
1946	309,330	15,546	77,975	76.9	3.8	19.3

Source: As for Appendix 'A'

APPENDIX C - EXPORT AND DOMESTIC GRAIN RATES FROM PEACE RIVER STATION, 1931

Table 1

Export Grain Rates from Selected Stations in Peace River to Fort William

From	Distance (miles)	Rates cents/100 lbs.	Rates cents/ton-mile
High Prairie	1,684	32.0	0.425
McLennan	1,712	32.5	0.425
Culp	1,738	33.0	0.425
Tangent	1,757	33.5	0.427
Berwyn	1,784	34.0	0.426
Silverwood	1,807	34.5	0.427
Sexsmith	1,838	35.5	0.432
Grande Prairie	1,852	35.5	0.429
Beaverlodge	1,880	37.0	0.440
Demmitt	1,908	37.0	0.434
Dawson Creek	1,940	38.0	0.438

Table 2

Export Grain Rates from Selected Stations in Peace River to Vancouver

From	Distance (miles)	Rates cents/100 lbs.	Rates cents/ton-mile
High Prairie	1,002	25.0	0.560
McLennan	1,030	26.0	0.568
Culp	1,056	26.0	0.554
Tangent	1,075	26.0	0.541
Berwyn	1,102	26.0	0.529
Silverwood	1,125	26.0	0.517
Sexsmith	1,156	27.0	0.525
Grande Prairie	1,170	28.0	0.533
Beaverlodge	1,198	29.0	0.541
Demmitt	1,226	29.0	0.530
Dawson Creek	1,258	30.0	0.537

continued ....

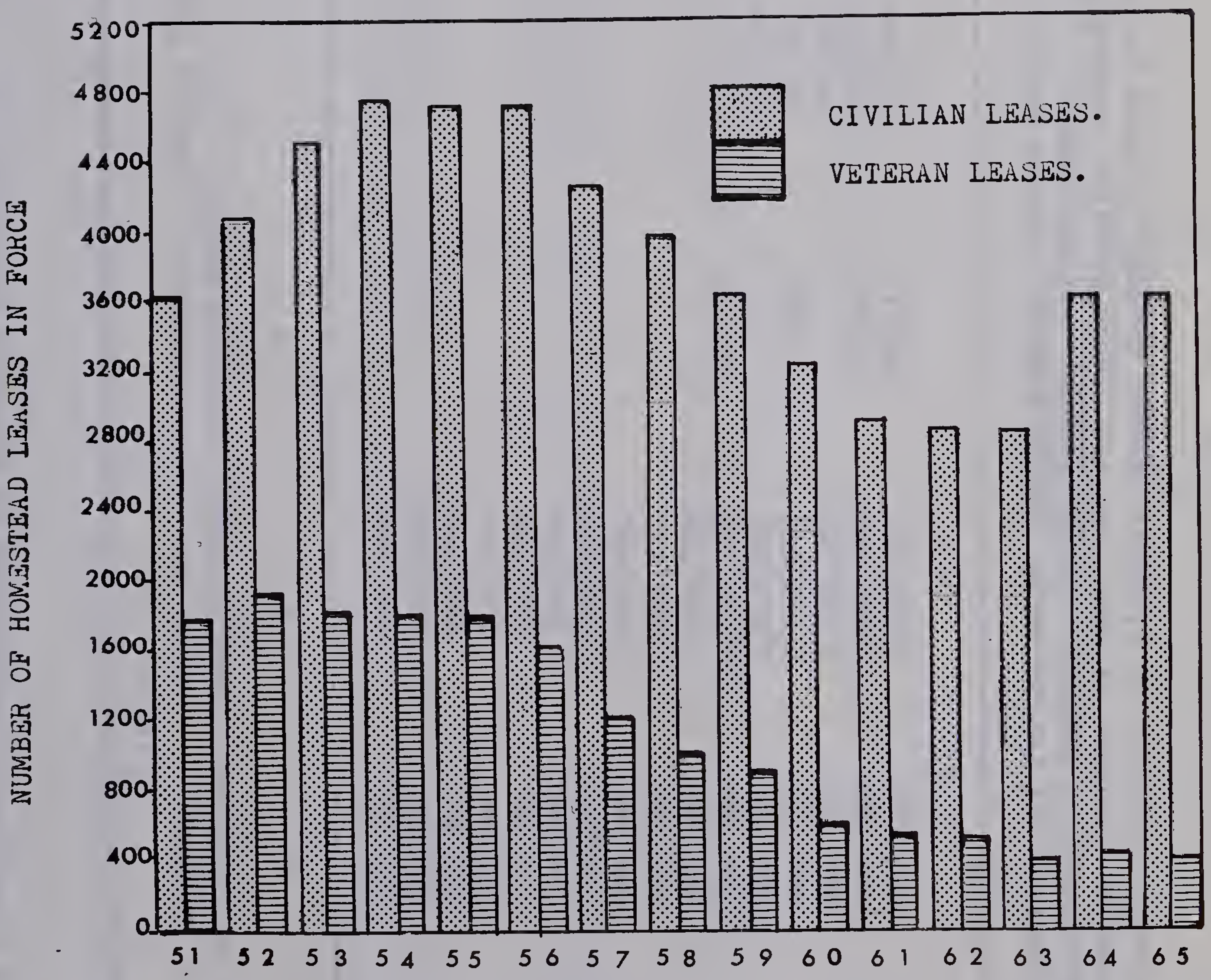
APPENDIX C (continued)

Table 3
Domestic Grain Rates from Selected Stations in Peace River to Vancouver

From	Distance (miles)	Rates cents/100 lbs.	Rates cents/ton-mile
High Prairie	1,002	49.0	1.09
McLennan	1,030	50.0	1.09
Culp	1,056	50.0	1.07
Tangent	1,075	50.5	1.05
Berwyn	1,102	50.5	1.03
Silverwood	1,125	51.5	1.02
Sexsmith	1,156	52.5	1.02
Grande Prairie	1,170	52.5	1.00
Beaverlodge	1,198	53.0	0.99
Demmitt	1,226	53.5	0.98
Dawson Creek	1,258	55.0	0.98

Sources: Table 1 - Canadian Pacific Railway Company, Pamphlet Number C.T.C., No. N.4035, Special and Competitive Local Joint and Proportional Freight Tariff on Grain, Flaxseed and Products thereof from Stations in Ontario, Manitoba, Saskatchewan, Alberta and B.C., to Fort William, Port Arthur and West Fort William, Ontario.
Table 2 - Canadian Pacific Railway Company - Pamphlet Number C.T.C., No. N. 4090 - Special and Competitive Local and Joint Export Freight Tariff on Grain and Grain Products from Stations in B.C., Alberta and Saskatchewan to Vancouver, New Westminster and North Vancouver, B.C.
Table 3 - C.N.R. Pamphlet Number W. 184-B CRC No. W. 679.

APPENDIX D - HOMESTEAD LEASES, ALBERTA 1951 - 1965



Source:- Alberta Dept. of Lands and Forests, Annual Report, 1965.

Figure 44

APPENDIX E - PROVINCIAL EXPENDITURE ON HIGHWAYS AND LOCAL ROADS - 1948 TO 1963

	Alberta					B.C.
Year	Highway Construction $	Highway Maintainance $	Local and District Roads $	Natural Resources Roads $	Winter Works $	Highways and Local Roads (Construction and Maintainance) $
1948	318,476	161,380	230,736			1,246,726
1949	353,213	225,959	316,250			1,488,683
1950	1,085,863	234,867	461,907			687,737
1951	1,520,547	270,586	542,354			1,054,400
1952	2,286,706	316,491	549,668			84,834
1953	3,048,566	436,313	860,088			1,458,200
1954	3,841,838	616,479	1,198,009			1,260,573
1955	4,516,865	695,896	1,341,852			2,055,082
1956	5,267,110	666,379	1,284,637			2,790,964
1957	5,015,359	821,866	1,399,186			2,068,245
1958	6,643,602	1,059,450	1,590,454	10,000		1,400,045
1959	7,363,052	900,316	1,813,352		276,524	not available
1960	7,233,281	1,046,783	2,196,041	2,000	349,257	2,586,638
1961	3,980,822	943,795	2,185,182		254,936	2,245,699
1962	3,043,592	1,061,574	2,064,860	25,247	243,152	2,480,676
1963	3,853,788	1,085,432	1,947,677	20,216	413,747	3,968,653

Sources: Alberta, Department of Public Works, Annual Reports, various years.
Alberta, Department of Highways, Annual Reports, various years.
British Columbia, Minister of Public Works, Annual Reports, various years
British Columbia, Minister of Highways, Annual Reports, various years.

APPENDIX F - COMMODITY SHIPMENTS ON N.A.R. FROM PEACE RIVER STATIONS TO EDMONTON 1951 AND 1961

Station	Grain (Tons) 1951	Grain (Tons) 1961	Livestock (Tons) 1951	Livestock (Tons) 1961	Lumber (Tons) 1951	Lumber (Tons) 1961
Enilda	1,760	6,720	306	477	9,025	5,475
High Prairie	7,600	22,800	891	630	21,700	8,325
McLennan	-	1,760	45	81	5,775	-
Donnelly	3,680	10,920	-	171	1,900	-
Falher	11,120	33,920	279	486	875	-
Dreau	600	360	-	-	-	-
Girouxville	9,400	20,720	-	351	450	-
Watino	1,040	1,480	36	27	4,525	-
Tangent	880	3,740	9	126	3,400	-
Eaglesham	1,960	12,160	45	324	50	-
Codesa	1,880	2,240	9	45	2,125	-
Belloy	1,920	2,520	54	117	900	-
Wanham	4,120	16,560	81	36	600	-
Prestville	440	-	36	-	150	-
Rycroft	2,640	11,660	180	216	825	2,575
Spirit River	6,960	24,640	612	549	12,375	75
Silverwood	400	-	9	-	350	-
Woking	1,000	6,480	63	-	3,300	-
Webster	-	-	-	-	4,025	-
Sexsmith	11,400	30,360	702	9	850	-
Clairmont	5,160	10,880	36	-	4,325	-
Grande Prairie	5,400	14,960	918	27	19,125	31,825
Dimsdale	1,320	3,760	45	67	4,325	2,350
Wembley	4,600	7,200	162	-	2,700	-
Huallen	1,400	1,640	18	-	-	-
Beaverlodge	3,200	8,800	585	72	1,625	50
Albright	-	360	-	-	-	-
Hythe	6,640	9,840	765	162	2,425	-
Lymburn	400	-	126	-	5,825	4,350
Tupper	-	-	18	-	1,125	525
Pouce Coupe	1,200	5,120	-	-	-	-
Dawson Creek	19,160	5,400	1,584	18	28,375	19,850
Reno	1,840	4,360	9	-	1,075	-
Nampa	2,680	11,040	-	36	1,375	-
Judah	640	2,280	18	-	-	-
Peace River	2,360	5,320	135	-	-	-
Roma	2,320	1,600	18	-	-	-
Grimshaw	27,600	45,280	639	702	4,400	8,400
Berwyn	5,400	7,800	207	270	-	-
Brownvale	4,760	9,080	171	180	-	-
Whitelaw	2,520	6,160	45	144	125	-
Bluesky	5,760	9,720	144	234	500	50
Fairview	5,800	10,920	243	9	1,000	675
Gage	1,880	4,800	18	144	-	25
Hines Creek	6,960	16,800	1,809	765	4,450	5,175

Source: Records of the N.A.R., at Edmonton, July, 1965.

APPENDIX G - RAIL COMMODITY FLOWS - PEACE RIVER REGION, 1964

Station	Out going Freight (Tons) Grain	Livestock	Lumber[1]	Incoming Freight (Tons) General Commodities
N.A.R.				
Enilda	6,400	405	3,475	334
High Prairie	17,080	540	7.050	21,792
McLennan	880	81	2,100	321
Donnelly	9,520	144	-	2,788
Falher	25,400	405	-	4,569
Girouxville	17,840	270	-	11,020
Watino	800	36	-	36
Tangent	3,520	117	-	965
Eaglesham	8,840	207	-	2,188
Codesa	1,160	36	-	50
Belloy	1,000	135	-	197
Wanham	12,760	36	-	3,297
Rycroft	12,520	216	-	3,240
Spirit River	22,520	477	1,275	5,082
Woking	4,320	-	-	207
Sexsmith	21,960	9	-	4,602
Clairmont	9,360	-	-	-
Grande Prairie	14,360	18	31,800	31,996
Dimsdale	2,840	-	975	158
Wembley	6,280	63	-	369
Huallen	1,720	-	-	-
Beaverlodge	8,880	63	-	4,605
Hythe	9,800	180	-	5,222
Demmitt	-	-	1,675	-
Pouce Coupe	8,160	-	-	753
Dawson Creek	3,640	9	1,100	19,347
Reno	3,040	-	-	198
Nampa	9,880	27	-	2,619
Judah	800	-	-	62
Peace River	2,960	-	-	12,824
Roma	1,840	-	-	88,977[2]
Grimshaw	11,120	657	9,175	13,666
Berwyn	6,520	270	1,050	1,746
Brownvale	7,480	162	-	2,090
Whitelaw	4,880	126	-	664
Bluesky	8,040	216	-	547
Fairview	18,400	9	-	547
Gage	4,320	162	-	328
Hines Creek	16,680	585	3,625	3,941
P.G.E.				
Dawson Creek	45,480[3]	2,500[4]	19,000[5]	6,000
G.S.L.R.				
Manning (South)	29,960[6]	-	6,325[7]	

continued ....

APPENDIX G (continued)

Notes: [1] This includes logs, cut timber and pulpwood

[2] This tonnage is one received at Roma, from all stations on the G.S.L.R. It is only inferred that all the grain originated from Manning.

[3] The figure given for Dawson Creek, amounts to the tonnages of grain interchanged to P.G.E. from N.A.R., therefore the grain will probably have originated at some other N.A.R. stations.

[4] This is an inferred tonnage based on 1956 figures. Before the P.G.E. was completed, Dawson Creek was the heaviest shipper of cattle on the N.A.R. to Edmonton.

[5] Inferred tonnage, based upon 1956 figures, before the P.G.E. was completed.

[6] This tonnage is the one received at Roma, from all stations on the G.S.L.R. It is only inferred that all the grain originated from Manning.

[7] South from High Level.

Source: Records of N.A.R. at Edmonton, July, 1965.

APPENDIX H - COMMUNITIES IN PEACE RIVER REGION SERVED BY TRUCKING COMPANIES FROM EDMONTON - 1964

Community	Population	Trucking Companies
Beaverlodge	1,071	1,2,4,15.
Belloy	less than 50	1,2,5.
Berwyn	383	4,6,8,14.
Bezanson	68	1,2,15.
Bluesky	108	4,6,8.
Bonanza	less than 50	1.
Brownvale	237	4,6,8,14.
Calais	less than 50	1,15.
Clairmont	292	2,5,15.
Codesa	less than 50	2,5.
Dawson Creek	13,000	1,7.
Debolt	87	1,2,15.
Dixonville	104	12.
Donnelly	308	8,9.
Dunvegan	less than 50	5.
Eaglesham	223	2,5,9.
Enilda	106	4,11.
Fort St. John	5,000	1,7.
Fairview	1,777	3,4,6,8.
Falher	856	9.
Fort Vermilion	768	4.
Girouxville	325	9
Grande Prairie	10,365	1,2,3,4,5,6,15.
Grimshaw	1,515	4,6.
Grouard	303	4,11.
Guy	less than 50	9.
High Level	90	4,10.
High Prairie	1,756	4,11.
Hines Creek	454	3,4,6,8.
Hudson's Hope	1,000	1,7.
Huallen	less than 50	2.
Hythe	558	2,5,15.
Keg River	279	4,10.
La Crete	277	4.
Manning	1,189	4,12.
McLennan	1,078	9.
Nampa	279	4,6,8,12.
North Star	87	4,12.
Notikewin	88	4,12.
Pouce Coupe	700	1,7.
Paddle Prairie	339	4,10.
Peace River	3,318	3,4,6,8.
Roma	less than 50	4.
Rycroft	556	2,5,15.
Sexsmith	531	1,2,5,15.
Sturgeon Heights	73	1,15.
Spirit River	1,013	1,2,5,15.
Taylor	450	1,7.

continued ....

APPENDIX H (continued)

Community	Population	Trucking Companies
Tangent	102	1,2,5.
Valleyview	2,142	2,13,15.
Wanham	276	2,5.
Wembley	324	2,4,5.
Whitelaw	264	4,6,8,14.
Woking	157	2,5.
Worsley	58	3,4,6,8.

KEY: TRUCKING COMPANIES OPERATING FROM EDMONTON

1. Canadian Freightways
2. Central Peace Trucking Co.
3. Gray Carriers
4. Grimshaw Trucking
5. Sanduls Trucking
6. Shaw Trucking
7. Loiselle Trucking
8. Fairview Trucking
9. Falher Trucking
10. Byers Trucking
11. Spendiff Trucking
12. Levine Trucking
13. Bob's Truck Service
14. Berwyn Trucking
15. Bell Bros.

Sources: Alberta Shippers Guide, Published Annually by the Alberta Motor Transport Association, Edmonton and Calgary, and interviews with personnel of individual trucking companies.

APPENDIX I - DATA AND FORMULAE FOR STATISTICAL ANAYSIS OF RAIL COMMODITY MOVEMENT - 1956 AND 1964

---

1. FORMULAE

Correlation Coefficient (r) = $$r = \frac{\frac{\Sigma xy}{n} - \bar{x}.\bar{y}}{\sigma x.\sigma y}$$

Where: x = Logarithm of Population for center, adjusted by subtracting average of total of Logarithm Population.

y = Logarithm of Tonnage for center adjusted by subtracting average of total of Logarithm Tonnage.

n = Number of pairs of data.

$\bar{x}$ = Mean of x.

$\bar{y}$ = Mean of y.

σ = Standard Deviation, i.e. $\sqrt{\frac{\Sigma x^2}{n} - \bar{x}^2}$

In general, coefficients of between +0.5 and 1.0, and between — 0.5 and — 1.0 are significant, while if values lie between — 0.5 and + 0.5, little significant correlation is to be expected. If a value of zero is obtained, this indicates that the two sets of data fluctuate completely independantly of each other, and no correlation exists.

Regression Analysis

$$b - \bar{b} = r.\frac{\sigma b}{\sigma a} . (a - \bar{a})$$

Where: r = Correlation Coefficient
σ = Standard Deviation
a = Log. of Population for center.
b = Log. of Tonnage for center

Correlation Significance Test (t) = $$\frac{r.\sqrt{N - 2}}{\sqrt{1 - r^2}}$$

Where: r = Correlation Coefficient.
N = Number of Pairs of data.
N — 2 = Degrees of Freedom.

The 't' value and degrees of freedom applied to Student's 't' graph which gives the percentage probability that the coefficient could have occurred by chance.

Sources: S.Gregory, Statistical Methods and the Geographer, London, 1963, pp. 167-184, and J.I.Griffin, Statistics, Methods and Application, New York, 1962, p. 243.

continued ....

APPENDIX I - (continued)

2. DATA USED

Center	1964			1956	
	Population	Outward Tons to Edmonton	Inward Tons from Edmonton	Population	Inward Tons from Edmonton
Enilda	106	10,343	334	96	14,617
High Prairie	1,765	24,346	21,792	1,743	36,021
McLennan	1,078	3,016	321	1,092	429
Donnelly	308	9,520	2,788	265	8,413
Falher	856	25,589	4,569	802	15,654
Dreau	50			50	1,280
Girouxville	325	17,870	1,020	300	16,939
Watino	93	800	36	150	6,539
Tangent	102	3,520	965	92	3,685
Eaglesham	223	8,840	2,188	112	7,599
Codesa	50	1,160	50	50	2,036
Belloy	50	1,000	197	50	2,256
Wanham	276	12,760	3,297	50	9,675
Rycroft	556	12,520	3,244	424	5,670
Spirit River	1,103	23,795	5,082	743	20,564
Woking	157	4,320	207	113	4,716
Sexsmith	531	21,960	460	345	18,623
Clairmont	292	9,360		164	9,900
Grande Prairie	10,365	46,169	31,996	6,302	29,423
Dimsdale	50	3,815	158	50	3,128
Wembley	324	6,280	369	272	7,275
Huallen	50	1,720		50	2,050
Beaverlodge	1,071	8,880	4,605	768	6,925
Hythe	558	9,800	5,222	481	10,334
Pouce Coupe	700	8,160	753	585	5,880
Dawson Creek	13,000	4,749	19,347	7,531	76,835
Reno	52	3,040	198	51	4,468
Nampa	279	9,907	2,619	50	9,411
Judah	50	800	62	50	1,254
Peace River	3,318	2,960	12,824	2,034	5,190
Roma	50	1,840	88,977	50	2,440
Grimshaw	1,515	20,502	13.666	904	41,535
Berwyn	383	6,520	1,746	342	7,559
Brownvale	237	7,489	2,090	177	6,741
Whitelaw	264	4,880	664	212	4,616
Bluesky	108	8,049	547	105	6,367
Fairview	1,777	19,450	547	1,206	9,856
Gage	50	4,320	328	50	2,560
Hines Creek	454	20,710	3,941	360	20,085

Source: Records of the N.A.R., Edmonton, July, 1965.

APPENDIX J - DATA AND FORMULAE FOR STATISTICAL ANALYSIS OF ROAD DENSITIES - 1965

---

1. FORMULAE

Regression Analysis See Appendix I

Standard Error of Estimate $(Sb) = \sigma b \cdot \sqrt{1 - r^2}$

Where: b = Road densities in Logs.
σ = Standard Deviation
r = Correlation Coefficient

With this value, it can be said that there is a 95% probability that actual values will differ from the regression line value by not more than twice the standard error, and that the probability of values differing by more than this amount is only 0.1% (see student's 't' test, Appendix I)

Source: Gregory, op. cit., p. 190

2. DATA USED

Area	Population	Road Mileage
County 1	22,013	443
I.D.126	4,631	172
I.D.125	5,622	146
I.D.134	2,502	134
M.D.133	2,960	45
I.D.132	2,922	91
M.D.130	6,661	200
M.D.136	3,694	113
I.D.139	3,197	121
M.D.135	7,368	136
I.D.131	2,686	65
I.D.138	4,361	143
I.D.146	648	42
I.D.147	3,189	194
I.D.145	144	27

Sources: Alberta, Provincial Bureau of Statistics, Population of Alberta, 1965. and Department of Highways, official road map, 1965.

UNIVERSITY OF ALBERTA LIBRARY

REQUEST FOR DUPLICATION

I wish a photocopy of the thesis by

G.A. Willis (author)

entitled Development of Transportation The Peace River Region . . .

The copy is for the sole purpose of private scholarly or scientific study and research. I will not reproduce, sell or distribute the copy I request and I will not copy any substantial part of it in my own work without permission of the copyright owner. I understand that the Library performs the service of copying at my request, and I assume all copyright responsibility for the item requested.

University of Alberta Library
0 1620 1520 7044

B29859